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What is Fair

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WHAT IS FAIR

A STUDY OF SOME PROBLEMS OF PUBLIC UTILITY REGULATION

BY

WILLIAM G. RAYMOND, C. E., L. L. D.

Professor of Civil Engineering and Dean of the College of Applied Science in the State University of Iowa; Member of the American Society of Civil Engineers; American Railway Engineering Association, etc.

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WILLIAM G. RAYMOND

L. C

TO MEN WHO WISH
TO BE FAIR
IN THEIR DEALINGS WITH
THEIR FELLOWS.

"And as ye would that men should do to you,
do ye also to them likewise."
Jesus of Nazareth.

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PREFACE

This little book should be read in the spirit in which it is written. Because its tone may seem to some readers to be pro-corporation, it should be said that the author has no financial interest, direct or indirect, in any public utility, and in his professional work he has been employed more often by the public than by private interests. The book is the result of an honest effort, extending over some years, to determine for the author's own satisfaction just what is fair in the relationships of the public and the owners of its utilities. Always he asks, "What is fair?"

Only a few of the many problems that arise are considered, and these only to try to develop fundamental principles that should govern those having to labor with the details. The complete argument as it has worked itself out in the

author's mind is not always given. For some conclusions there has been little or no argument, such intuitive sense of fairness and justice as the author possesses seeming to point directly to the conclusion. It is realized that some readers may have a more highly developed sense of what is right and fair and may disagree with some of the conclusions reached. Be this as it may these pages are presented as containing the out-loud thinking of one student of business relationships, who has been trained as an engineer to deal with facts and theories and to try to make theories agree with facts, and who is trying to be fair in his judgment of human questions that cannot be settled by the application of fixed formulas. In this same spirit the book should be read. Let the reader think questioningly as he reads and decide for himself not too hastily whether or not the general relationships that should exist between the public and its service corporations are correctly stated, when the statements are considered in the light of gen-

erally approved honorable business practices. The attempt has been to start with what is considered honorable dealing in purely private business and to work from this to the semi-public business of the public utility.

Public ownership is not discussed. In an Utopia, government will perform all functions now regarded as public functions and many that are now regarded as purely private functions. We do not live in Utopia. Therefore, Utopian conditions should not form the basis of any reasoning with respect to present business relationships. Only what is generally conceded by this day and generation to be fair and honorable in business dealings should govern these dealings. Therefore, it is to the men of today, particularly those having to do with the problems of today under the conditions existing today, that the thoughts on these few pages are addressed, in the hope that though not new, their formulation may be suggestive and possibly helpful in the solution of some of the many troublesome

questions now vexing utility owners and commissions, legislative bodies, courts, and interested business men.

As a result of the war now in progress, certain advances may be made by government in the regulation of the business of furnishing food and fuel, and possibly in other lines. Such advances will in no wise affect the general argument of this book which is intended to lead to these general conclusions:

1. That so long as public service is turned over to private owners and operators, the provisions of the charter and franchise of every public utility should be as complete and definite as it is possible to make them, and should be scrupulously observed by both parties to the contract.

2. That in so far as the charter and franchise are silent, public utility business should stand on the same basis as other business of equal risk and magnitude, being subject to governmental repression when it is unfair or oppressive in its dealings with the public, and free

from interference so long as its dealings are fair and just.

3. That fairness and even justice should characterize all the acts of utility owners and public, growing out of their mutual relationships.

For valuable suggestions the author is indebted to his colleagues, Professor P. S. Pierce of the Department of Economics and Sociology, Professor J. B. Hill of the Department of Electrical Engineering, and Professor S. M. Woodward of the Department of Mechanics and Hydraulics, but it is not intended by this acknowledgment to imply that they or any of them agree with all of the expressed conclusions and opinions.

WM. G. RAYMOND.

IOWA CITY, IOWA,
August, 1917.

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WHAT IS FAIR

CHAPTER I

GENERAL RELATIONSHIPS

Government and the Individual. — Perhaps it is trite to say that in the last analysis government exists solely for the benefit of the individuals governed — all the individuals; but even if it is trite, it is a thought that must be constantly in mind when discussing individual or corporate relationship with government. Modern government must be of the people, and it must be for the people governed, but it can be only indirectly by the people.

The simplest and natural form of government is the parental government of the family. When this is efficient and wise, it protects the members of the family from wrongs attempted to be perpe-

trated by other families or individuals; it protects the family property from outside interference; and it so administers its internal affairs as to protect each member from the selfishness and greed or unruly passion of every other member. It performs other functions that need not be mentioned now.

So government of the people must protect every individual in the enjoyment of his inalienable rights of life, liberty, and the pursuit of happiness, and thus must protect him, so far as possible, from interference from outside the body of people forming the government, and from the selfishness and greed and unruly passion of every other individual of his own group. It must sometimes protect him from himself.

Government may also do for the individual what he cannot so economically or completely do for himself, and may undertake any line of activity that the people wish to undertake. It may lay out and build roads and streets for the individual to travel over; it may operate

vehicles over the roads and streets to carry the goods and person of the individual; it may build and operate other ways for carrying the goods of the individual and the individual himself; it may create and operate works for supplying necessaries, and even luxuries of life to the individual; it may till the soil; raise and slaughter animals and manufacture and supply animal and vegetable food; manufacture and supply clothing and other articles necessary or disirable; indeed, there is no form of human activity in which government may not engage if the people governed wish to live as a community with common property operated and administered by chosen representatives.

Because most men possess ambition to be independent, to live their individual lives in their own way, to reap for themselves and their progeny the results of their own labor and intelligence, the community idea has not been adopted generally. In the past leading spirits gathered following clans; some of these developed

into monarchies and empires; and finally came limited monarchies and republics.

Under modern government the individual is not a lease holder of the sovereign. He may own the fee to his land and other property; and so long as he obeys the laws that he, himself, has established through his representatives, he may work as he pleases and may enjoy as his own the products of his labor, or the results of his intelligence and foresight. He must pay his allotted proportion of the expense for the conduct of his government, which he does in various ways but mostly by paying direct or indirect taxes.

Government may take the property of the individual when it is deemed necessary for the public good, the good of all or many individuals, but under American government it may not do so without due process of law, which includes paying for the property taken what it is reasonably worth together with the amount of any damages to remaining property due to the taking. To determine what prop-

erty is reasonably worth and the amount of damage to remaining property, may be and frequently is quite difficult. When government takes private property — that of an individual or a corporation — for public use, it is said to exercise its right of eminent domain.

Likewise government may exercise a proper supervision over the conduct of business to see that it is devoid of fraudulent or immoral practice, or practices calculated to be excessively burdensome on the weaker and more ignorant of the people; and to supervise in certain other directions that will be discussed later.

A corporation is an artificial individual, which within the limits of its privileges does business just as a natural individual does. A corporation is created by the issuance by government of a charter or a certificate of incorporation to a person or persons, which charter or certificate permits the holders to act as representatives of a newly created intangible entity and limits their activities to certain lines specifically stated in the charter or articles

of incorporation, and defines and limits also their responsibilities. When those permitted lines of activity involve the acquiring of property, and its use, then, subject to the limitations of the charter, the rights of the corporation with respect to such property are the same as would be those of an individual who might own it. Those individuals who own stock of the corporation are sometimes personally responsible to some extent for the acts of the corporation and sometimes not at all, according to the character of the corporation and the laws under which it is formed. The natural individual exists by act of nature and is a free moral agent doing as he pleases so long as he keeps within the laws of the country in which he lives and obeys the laws of nature. If he is a citizen of a republic, the laws he must obey are those established by his own representatives in government. The corporation — an artificial individual — exists by permission of government and is subject not only to all the statute and common laws governing the indi-

vidual but to certain other specific laws limiting its activities and governing its procedure, which it is conceded government has the right to impose for the good of the public on any creature of its own creation, even as nature imposes certain laws on the objects of her creation and punishes the individual violating them. And every corporation by seeking and accepting its charter or certificate acknowledges this right of governmental control.

Property and Ownership Rights. — Property is anything that may be owned by a person. It may be a tangible thing or it may be an intangible right. Thus one may own a piece of land; the land is property; another may own the right to cross this land at a certain place; this right is property; it may and probably does also belong to the owner of the land but he owns the land subject to the right of his neighbor to cross it at the particular place. Such a right is called an easement. Generally an easement is what the public owns when it takes the prop-

erty of an individual for a road. Should the road ever be closed the ownership of the right to use the ground exclusively should revert to the owner of the adjoining land. If government buys a piece of land for public use outright — buys the fee as the saying is — government becomes the owner of the land and there is no reversion when the public is through using the land for the purpose for which it was acquired. Government may sell the land and devote the money received to other lawful purposes or it may use the land for any lawful purpose; it owns the physical thing not simply the intangible right to use. Of course, land not being wholly movable, cannot be handled as some other property, and in general, excepting mining properties, practically only the free use of the land is bought and sold or owned.

So when a railroad company is chartered, government exercises its own right of eminent domain on behalf of the railroad and permits condemnation proceedings to be instituted whereby the rail-

road company takes the land that it needs for its purposes from private owners, obtaining only an easement, the property taken reverting to the adjoining owners when, if ever, the railroad company or its successor ceases to use the land for railroad purposes. But the railroad company may buy outright from its owners, purchasing the fee and not an easement and when it does this the land so purchased may be used for any purpose within the chartered activities of the company, or it may be sold as any other property wholly owned. The railroad company may sell its whole property, including the easements, to others. Generally railroad companies try to agree as to price with owners of lands needed for the construction of the railroad and try to buy the fee. When unable to do so they invoke government aid to take the land for them, which government does but secures for them only an easement for railroad purposes. One railroad company may purchase the right to operate its trains over the roadway of

another company. This right is property and presumably has value.

If government builds its own waterworks, it may condemn and take the necessary property from its private owners, but if government gives an individual or corporation a franchise to serve the public with water, government as a rule does not exercise its right of eminent domain on behalf of the individual or corporation which is compelled to buy such private property as it needs. In certain states government will exercise its right of eminent domain in behalf of an electric lighting company having a contract to light a city or town and desiring to possess a certain water power or lands adjacent to such power for its use, but in general government exercises its right of eminent domain for privately owned public utilities only when, as is the case with companies owning railroads, telegraph, telephone, or power transmission lines, they must of necessity use particular properties or pieces of property in order to exist at all for the

service of the public. Thus the railroad must pass over the land between its termini; its route may be slightly varied to be sure, but only within limits and still be at all feasible; therefore if public necessity requires the railroad, as must be supposed when the public gives the company its charter, government must see to it that the company is able to secure the right to build and operate along a feasible and economical route. On the other hand the electric lighting company needs only the public streets or its lines and in general is able to locate its power house at almost any point that is reasonably convenient, and hence may buy in the open market and does not need the exercise of the right of eminent domain, which should be enforced only when absolutely necessary.

The charter that the railroad secures permitting it to build and operate a road for hire is property; the franchise that a street railway or electric lighting company secures from a city, permitting it to occupy the streets with its lines and

to operate these lines for hire, and presumably at a profit, is property. Charters and franchises may be bought and sold.

When government grants a charter or franchise to an individual or company, permitting the creation and operation of a plant for the performance of a public service for hire, the charter or franchise should definitely set forth what privileges are granted, what restrictions are imposed, and what degree of control government may exercise. Unfortunately charters and franchises of the past, and indeed many carelessly drawn charters and franchises of the present are wanting in complete, definite, or adequate statements, and as a result many troublesome questions have arisen between government and public utility companies. Corporations have failed to render the character or quantity of service demanded by the public and sometimes provided for in the franchise, though often only by implication or inadequate expression, and government has sought

to exercise a control not specifically mentioned in the charter or franchise, under the general notion that all persons or companies engaged in public service are subject to proper governmental control in any direction, and to any degree that from time to time seems necessary in the interest of the public good. And just as some corporations have failed in their plain duty to the public served, so have public officers and would-be public officers sought favor with the public by advocating closer regulation or control of and lower rates for service by the utility companies. There have been and are some good utility corporations and some good public officers; and there have been and are some bad utility corporations and some bad public officers.

The attitude of the courts is very well expressed in a few sentences from Judge Sessions' opinion in the Ann Arbor Railroad Rate Case: [1]

[1] Ann Arbor Railroad Company *vs.* Cassius L. Glascow *et al*, U. S. District Court for the Eastern District of Michigan. March, 1916.

"The properties of railroad companies and other public utility corporations are devoted to public use and, therefore, are necessarily subject to public regulation within constitutional limitations. Such corporations are clothed with unusual powers and owe a corresponding duty to exercise those powers fairly and reasonably and for the public good. Every charter or franchise granted to such a corporation contains a direct obligation to yield obedience to the lawful mandates of the sovereignty to which it owes its existence. Railroad property is so far public in its nature as to be subject at all times to reasonable legislative regulation and, on the other hand, is so far private in character that its owners cannot be deprived of any part thereof without just compensation. On one side is the imperative duty to render required service at a reasonable rate and upon the other side is the absolute right to be permitted to earn a fair return upon the capital necessarily invested in the enterprise."

The usual expression is "fair return" on the "fair value" instead of on the "capital invested." "Fair return" and "fair value" are discussed in subsequent chapters.

When government has permitted a company to create a plant to perform public service and to perform that service for hire without restriction as to rates, and the company proceeds to take advantage of its rights and builds up a business yielding it a large return, the right to continue to operate and to earn until the expiration of the time limit of the franchise, is conceived to be property just as much as the land or physical plant owned by the company, none of which the public should be able to take away without proper compensation. What may be considered proper compensation and the general principles underlying its determination is treated in the chapter on Value. The point to be emphasized here is that whatever the corporation, or the individual, if it be an individual that owns the franchise, owns, whether physical or

intangible, whether land, plant, or rights, is to be considered as property which not even government may take either in whole or in part so long as it is lawfully held and used, without due process of law, which includes fair compensation for whatever is taken, and the amount of any damage that may accrue to the remaining property by reason of the taking. There are those who question the right of a company owner to continue to earn at any acquired rate, if that rate is judged to be excessive by a competent public authority; holding that the right to established earning rate is not property with value. Arguments may be made to establish the soundness of this position and others to establish its fallacy; but it is difficult to conceive of any conclusive argument either way, and the thought is advanced that the soundness or unsoundness of the position taken must be determined finally by appeal to man's inherent sense of justice. Some considerations that perhaps will guide that sense will be found in the following article.

Profits Earned. — The right to earn a profit over and above expenses is conceded to all men in private business. To the private business man the public concedes the right to include a salary for himself in his operating expense and when he does so he gets a living out of the expense of his business and his profit may be saved and accumulated from year to year until he has secured a competence or a large fortune. He is rated as a successful man if he accumulates a competence, as a particularly successful man if he accumulates a large fortune, and so long as his acts are considered honorable he is praised for his intelligence and business ability and his advice may be sought on public matters. There is no limit set to his rate of profit or the magnitude of his operations. Except rarely in times of greatest stress, as a time of war, the law will not attempt to regulate his earnings, nor even then unless he be judged to be oppressing the people, and to reduce his already acquired earning capacity would be to take

his property without just compensation, which is a violation of the court's interpretations of the constitution of this country. This is said with full knowledge of the decision of the U. S. Supreme Court in the Oregon "Hours of Labor" Case [1] which simply sustained a police regulation, established as was distinctly stated in the act, in the interest of the health of the community. It is recognized that police regulations may be established in the interest of the common good that seem to limit individual activities and that may be construed by some to be depriving the individual of property — the right to work as he will — without just compensation. The individual may work as he will so long as he does not make a nuisance of himself and does not interfere with the welfare of the community. The right to work in such ways as to create a nuisance or interfere with the welfare of the community is not property; there is no such

[1] Bunting *vs.* The State of Oregon. Decided April 9, 1917.

right pertaining to any individual of the United States government, which was established to " promote the general welfare." Hence to prevent the individual by law from creating a nuisance, or interfering with the general welfare, is not taking his property. Governing the use of property and taking property are two different things, which should be clearly distinguished but are sometimes confused. If earning large profits is determined to interfere with the general welfare of the community then large profits must be prohibited, but this prohibition should apply to purely private enterprises, if there are any such, as well as to privately owned public utilities.

The unfair and altogether reprehensible business methods of certain private corporations and monopolies are known, but are not now being considered. Only operations under fair and honorable business methods are being discussed for purposes of comparison. Formerly to corporations proposing to perform public service, franchises and charters were given

without any provision for the limiting of profits or for the public control of the rates for the service. Under these charters or franchises corporations built plants for public service, fixed their own charges, and in many cases became very profitable concerns; so much so that their stocks gradually advanced until they were worth several times their normal par value. Later franchises gave the public the right to revise or approve rates from time to time and to regulate the operations of the corporations in other ways.

Gradually public opinion as voiced by the courts seems to have concluded that all privately owned public utility properties, even though operating under charters which are silent on the questions of rates, earnings, and profits, are entitled to earn only a fair return on the fair value of the property used in the public service, but there has been no determination of what constitutes a fair rate of return, nor any universally adopted method of determining the fair value upon which the

fair return is to be computed. Public opinion as voiced by the courts will eventually control these matters and it seems essential to fair dealing that public opinion should be fair and reasonable. It may be argued, as stated in Judge Sessions' opinion already quoted, that no corporation has ever been formed that was not under obligation to recognize the supreme authority of the government that created it, and its own amenability to laws enacted subsequent to its establishment.

Laws change with the advance of civilization and the change in living conditions. New laws are found necessary to govern the conduct of individuals under new conditions or unforeseen and consequently unprovided for practices detrimental to public welfare. The introduction of many conveniences, the telegraph, the telephone, the automobile, the jitney bus, or, on the other hand, the development of new methods of defrauding bank depositors or corporation stockholders, or of oppressing or defrauding the public,

all have required new laws or modifications of old ones to meet the changed conditions and for the protection of the public. But it is at least doubtful if fair dealing will permit laws to be enacted subsequent to the chartering of a corporation, or if enacted, to be enforced, to materially alter the conditions of the charter or franchise, which is essentially a contract, or to destroy any part of the property lawfully created under the charter. If, by lawful methods, honorable and without unfair discrimination, a public utility corporation has under the public eye built up a business having a dependable net return of any amount or any rate upon its actual cash investment, the right to earn that return, or so much of it as may be possible during the life of the franchise, would seem to be lawfully acquired property, only to be taken from the corporation for public use by the exercise of the supreme power of government and upon proper payment of just compensation. Private dependable net earnings would be so considered; why

not honorably and fairly developed earnings of the corporation?

Dependable earning capacity is an element on which the value of the property depends, and as it is distinct and separate from the physical property, it must be judged to be an intangible element of property going with the physical property as a right, and, being otherwise dependable, subject to destruction only by public act. If the public concludes that the earnings are too high it may through its legislative bodies reduce those earnings to, but not below, what is judged to be a fair return, by reducing the rates charged for service, and this would be fair if the charter recognizes the right by definite provisions fixing a limit to earnings; but unless this right has been reserved in the charter, so that the corporation has had due notice of the possibility and the earnings exceed the charter limit, it is at least doubtful to a layman if the public is acting under the constitution if it thus destroys a part of the created property of the corporation, if the acquired ability

to earn is property, without due compensation. The might of public opinion, which will eventually be voiced by the courts, may accomplish such a result but will not fair dealing be outraged in the accomplishment? It may be fair at any time to limit the future returns of the corporation to any fair sum not less than that enjoyed at the time of consideration, or to limit the returns on future invested capital to a less rate of return than that enjoyed by the already invested capital, so long as the limited rate is a fair rate. This matter is further discussed in the chapters on FAIR RETURN AND VALUATION.

It is not proposed to defend any corporation which has violated its charter or franchise privileges or obligations or has otherwise improperly oppressed a helpless public. Such corporations should be dealt with according to law and to their deserts. But it is intended to declare that earning large profits is not *per se* a crime or misdemeanor; that except as it must be governed by the terms of its

agreement with the public, a public utility corporation should stand on the same footing as any private business catering to or depending on the public for support. The fact that it is a creature of government, is possibly a partial or complete monopoly, has possibly been favored by government in some way, and hence is amenable to government in certain matters, should all be reflected in the charter — a contract — the letter and spirit of which both corporation and government should observe in the performance of their respective parts.

CHAPTER II

SUITABLE PUBLIC CONTROL

Directions of Control. — It is now generally conceded in America that the public may exercise suitable control over all public utility companies or owners. What constitutes suitable control in times of peace and ordinary business activity becomes a pertinent and sometimes a troublesome question.

With respect to modern corporations chartered in the light of present public opinion, the charter should indicate definitely what directions public control may take — the character of the control will depend on the characteristics of the several controlling authorities. But many charters — even modern ones — are quite defective in this respect and the older ones are apt to be quite silent as to any details of public control. Just the extent then of public control that is suit-

able or proper in a given case may depend on the terms of the charter or franchise. The principal directions in which the public should undertake to exercise control are:

1. *Capitalization.* — To see that authorized evidences of debt — stocks and bonds — are not issued in excess of the value of the property or the sacrifice made by the company in money, or the money equivalent of the value of service or material furnished in creating the property.

2. *Character of Operations.* — To see that they are within the charter provisions.

3. *Safety of Operations.* — To see that the conduct of the business proceeds with as much safety as possible to employes, patrons, and public.

4. *Equity in Service.* — To see that equity is observed in dealing with patrons; that service offered one patron is not withheld from another operating under like conditions; that no favoritism is shown.

5. *Quality of Service.* — To see that the service rendered the public conforms with that prescribed in the charter or franchise.

6. *Control of Rates for Service.* — To see that they are sufficient but neither exorbitant nor improperly discriminatory.

A few of the principal considerations leading to these conclusions will be given, control of rates being treated in a chapter by itself. Municipal utilities should be under state control. Excepting with respect to certain police regulations general control of interstate utilities should lie with the federal government.

1. **Capitalization.** — The private business of banking is recognized by common consent to be a business of such vital importance to commercial and financial stability as to warrant the exercise of governmental supervision in certain matters. One of these matters is capitalization. The banking company with an authorized capital of $100,000 issued must have $100,000 of cash or its equivalent actually paid in to the company

treasury. This is the theory, but ways of avoiding a complete compliance with the law are sometimes discovered by smart promoters.

Industrial enterprises of other kinds are not always so guarded, and large capital issues may be made, representing very little actual money invested, but representing faith in a future prosperity or earning power. Persons will invest in the securities of such industrial enterprises at the outset as a speculation. If the faith in the future proves well founded, the 5 or 6 per cent return on a large stock issue purchased at a small price may represent 30 or 50 per cent or more on the actual investment. There was a risk, a venture; the speculator played to win and won. He might have lost, but if he had, the loss would not be likely to interfere with the general progress of business and so the capitalization of such enterprises has not been in general so carefully guarded by law as has the capitalization of banks.

The element of chance is present in all

business to some degree, and is an impelling element to many people. The line between legitimate chance taking and immoral gambling is a not entirely definite line. But almost certain it is that it would be undesirable to eliminate entirely the element of chance from general business. If no one had taken a chance the earth would not be yielding up its mineral wealth as it is now doing. If no one had taken a chance much of the prairie of the western United States, now covered with growing grain or feeding vast herds of domestic animals, would still be in virgin grass, supporting only the wild herds of horses and bison. Indeed, if no one had taken a chance, America would still be a wilderness inhabited only by wild animals and wild men. Farther back one need not go.

But in the interest of general stability it is considered to be desirable to remove from all regular business as much of the chance element as may be called "gamble," and to leave only that portion that may depend on men's judgment and acts

of Nature unusual and not to be foreseen. Moreover, it would seem to be desirable to protect the innocent and unsophisticated individuals of the family from those others who may be called human birds of prey, who profit and grow fat at the expense of those whom they are able to defraud, inducing them to invest their savings in worthless stocks or bonds. To a large extent people must be expected to look out for themselves; government cannot direct all the actions of all individuals; cannot keep every child's feet out of the mud puddles. But there are many ways in which within the law scheming financial operators may deceive and defraud the public generally, or the innocent stock and bond holders of legitimate enterprises. To safeguard the public and investors from such practices should be a part of the duty of government, and one of the ways in which it may proceed is to see that in all incorporated legitimate real enterprises every dollar of capital evidence means a dollar put into the property that is capitalized,

or a dollar of dependable capitalized earning capacity. Capital issued or invested cannot always represent value, because value in business depends on earning capacity and a new venture has always a problematic earning capacity. In a new venture, therefore, capital evidence, stocks, and bonds should represent money or the money value of service and materials used to create the property; while for a well-established business with good proven capacity, capital issues may, if permitted in certain cases, represent value rather than money spent.

With respect to this element of control, government or public is not more interested in public utility corporations than in private business corporations, except as the public utility corporation, a governmentally created monopoly, may use a small return on a large capital issue to justify exorbitant charges for service which charges yield a very high rate of return on the capital actually invested in the property of the corporation. The thing that makes one business of more

concern to the people than another is the degree of necessity to general business, life, and comfort, pertaining to the service of the business. The charges of a monopoly company furnishing water are of great interest to the people, and should rightly be as low as may be to yield just a fair return to the corporation for its service. The charges of a competitive corporation dealing in staples of food are of equal concern to the public, but until government undertakes the control of all business, there can be little control of such charges. Corners, combinations, and hoarding by food speculators, and gambling in futures may be regulated, but the charges of straight competitive businesses free from the influence of combination and the effect of the food gambler's activities, will always be determined by the law of supply and demand. The fact that the public utility corporation may issue securites in excess of the investment and thereby deceive the public as to its rate of return, together with the fact that monopoly

corporations, performing public functions, should deal fairly with the public which created them, are good reasons for the control of the capitalization of utility corporations, even though there were no other reasons for controlling the capitalization of all corporations.

It is advanced as sound public policy, that capital issues of all corporations should represent either money, or its value equivalent, invested, or value as measured by dependable earnings; and that for the purpose of avoiding confusion when discussing rates for service and fair return, public utility capital issues should represent only money, or its value equivalent, invested. Old corporations coming under active control for the first time may be found to have issued securities based on value as determined by what has seemed to be a dependable earning capacity. It is not proposed to suggest that the capital of these corporations be changed, although this would not be a serious matter, if the total earnings are not reduced. It has been a not

uncommon practice to build utility plants on borrowed capital, the bonds sold representing all the actual money put into the enterprise. Issues of stock have been given to promoters for their services, and to bond purchasers as bonuses to induce them to lend the necessary money, and some stock has been sold to secure working capital and for cash distribution in other less defensible ways. The stock represents the speculative value of the concern and the promotion cost, so far as this has value not represented by cash payments. The bonds represent the cost of the physical property. Sometimes they represent more than the cost of the physical property if sold at a large discount, in which case some part of the bonds represents speculative value. Speculative value when it materializes is the economist's surplus value. It has been not uncommon in those cases in which the state chartering the corporation requires a statement of cost, to so manipulate the matter through construction organizations within the

chartered utility corporation, and operating companies taking the property over, as to be able to report the property as costing the equivalent of the par value of the entire issue of bonds and stocks, which may be issued in practically equal amounts, when as a matter of fact the cash cost of the physical property is not more than the par value of the bonds. The remainder represents what is called, by some people, water, and by others, speculative value, and by others, promotion cost, and by economists, surplus. There are instances in which there has been no bond issue, the cost of the whole property being met with money raised by the sale of stocks.

It is asserted with some confidence that the sum total of stocks and bonds issued should represent no more than three items, namely: The money reasonably spent, money properly held as working capital, and the reasonable value of promotion service. "Reasonable value of promotion service" is subject to interpretation and it is not proposed here to

determine what this should be, but it is asserted again with some confidence that it is not 100 per cent or approximately 100 per cent of the cost of creating the property. There can be no harm in having two classes of securites, one carrying a fixed interest rate to be paid if earned and secured by a mortgage on the property and called either bonds or preferred stock, and another representing the speculative value, and carrying a variable rate of return depending on the earnings, provided it is clearly understood what each class stands for. If, for instance, a property costs $1,000,000 total when put on its feet, and issues 5 per cent bonds in the sum of $1,000,000 sold at par (quite unusual) to pay the cost, and issues $1,000,000 common stock to represent ownership of the business, and earns 10 per cent on that stock, it must not be forgotten that the property is paying 15 per cent on the reasonable investment, and public control should be such that these things are known, else there can be no proper determination of fair rate of

return for such a company. In this case just cited the profit is 10 per cent on the invested capital and 5 per cent is the wage of the money. It would perhaps be fairer in such a case to consider the 10 per cent not as a profit on invested capital but the wage for service, or profit on the business over and above expense, this profit for convenience being spoken of as a percentage of the invested capital. The owners who earn the profit may have no capital at all in the business; they have borrowed the capital and pledged the property as security; if they fail to earn even interest on the bonds they lose nothing but their time; the property is transferred to the bond holders.

In such a case as the foregoing successful one, it would be more logical, as suggested, to speak of the 10 per cent, not as profit on invested capital but as a wage or compensation for performing the service, which wage for lack of a better unit of measurement is measured as a percentage of the invested capital. It would seem to be much better to measure the profit as

a percentage of the business done, if some good way could be found to discourage the high cost of service that would be likely to result and to put a premium on low cost of service. Ways have been tried for doing this but not on a recognized division of total return into interest and profit. There seems to be no real good reason why a regulation that provides for a greater percentage of profit, or, if preferred, a greater wage for service, as a reward for efficiency shown in reduced cost of service to consumers, should prove unsatisfactory if carefully worked out and fairly administered. Indeed, it is thought that a frank recognition of the division of total earnings into money wage (interest) based on capital invested, and service wage or compensation, based on volume of business done and so graduated that the lower the cost to the consumer the higher the wage rate and total compensation to the serving agent, will do much to relieve the tension that quite generally exists between the public and its service corpora-

tions. This suggestion, thrown in here in the discussion of control of capitalization, will be elaborated somewhat elsewhere, and is thought to be a suggestion of importance.

Government then should control capitalization of public utility corporations in order to protect the investing public, and to simplify the work of rate regulation, helping to make it fair and thus to create a more friendly and cooperative spirit between the public and its service companies.

2. **Character of Operations.** — Contracts made by a corporation beyond the powers conferred by its charter are not enforceable at law. The charter defines the activities of the corporation and it may not operate beyond its stated field. A railroad chartered to conduct a transportation business only may not engage in coal mining as a business. It may own and operate its own shops, build its own cars and locomotives, mine its own fuel, and in general engage in any activities that it may deem essential or desir-

able activities in connection with the maintenance of its transportation business; but it may not build cars or locomotives for sale, mine fuel for sale, or in general engage in any commercial activity except the manufacture and sale of transportation.

Nevertheless corporations have not infrequently engaged in business beyond their legal powers, and in some instances have been able to interfere with the normal conduct of business by favoring the transportation of their own illegally produced commodity as against similar products of independent operators. Here it is not necessary to introduce public policy as a reason for public control. Law enforcement is all that is necessary. But public policy is the deciding consideration when discussing the question " Shall a public utility corporation be given power in its charter to engage in commercial enterprise foreign to its main purpose and in competition with other individuals or corporations? " The answer based on sound public policy will be,

"If the extra activity is such that the normal business of the utility corporation will give it an undue advantage over the competitor in the extra activity, the power would better not be given." And the reason is simply that there are greedy members of the family who regard business as war in which every advantage, fair or unfair, is to be taken against competitors — other members of the family — and government exists among other purposes to protect the individual from the greed and unruly passion of any other individual, and particularly is this true when the greedy individual is government's own creation.

Unfortunate has been the experience of some corporations engaging in wholly desirable but extra charter activities. The Pullman Company, for instance, has been estopped from performing certain public functions for the town of Pullman, which it created with altogether good intent, because the charter of the company did not provide for these activities. Here is a case in which govern-

ment might well include within the charter of the corporation the right to do certain things apparently foreign to the main purpose of the organization. An electric lighting company may find it desirable in order to protect the public and develop its business to sell fixtures and wire buildings. Under some circumstances this may be proper.

3. **Safety of Operations.** — As a matter of moral obligation in human relationships, any business, whether public or private, should be carried on in such a manner as to make it as safe as possible for those engaged in the business, for those served by the business, and for the public at large, likely in any way to be affected by the conduct of the business. Therefore police regulations of Boards of Health, Departments of Public Safety, Departments of Labor, or Public Utility Commissions of one form or another require the use of various safety appliances in factories and industrial plants of all kinds for the protection of the employes; in and on hotels and boarding houses,

schoolhouses, public halls, streets, and places, for the protection of the using public; and they require safety devices to be used by railroads to protect the employes and the traveling public and those who have occasion to cross railroad properties. Similar regulations provide for the proper treatment and disposal of sewage and wastes of all kinds so that they shall not become nuisances, or endanger the health of people or animals; and for purification of water supplies to make them safe for common use. To protect the public from fraud or imposition and also as health measures, regulations may provide for properly labeling all articles of food or drink or medicine, manufactured and offered for sale; and for the governmental inspection of food preparations, packing house products, etc. In fact government assumes to itself the right to protect each individual of its family, who may be unable to protect himself, from all unnecessary dangers arising through the acts of other individuals. Regulations, then, requiring the use of approved

safety appliances, methods of operation regarded as being as free from danger as possible, and limiting hours of continuous service of animals and human beings, being applied to all industrial enterprises as required, are regarded as reasonable regulations to be applied to public utility properties, and hence are included within the conception of suitable control.

4. **Equity in Service.** — It is believed to be right simply as fair conduct between men, and good public policy as well, for every business enterprise to treat all its customers alike who purchase service or supplies under essentially similar conditions, and it is asserted that every public service corporation created by government to serve the people in the place of government is in duty bound to deal thus equitably with the people. It is not only that rates for service must be the same when the service is required under like conditions, but the service should be the same. Railroad corporations should not withhold cars from one customer, nor delay them in transit

while furnishing all the cars that are asked by another favored customer and forwarding them with expedition. Such things have been done and businesses have been ruined by the practice. In some cases high prices due to an artificially created shortage of supplies have been maintained by the aid of railroads, which failed to furnish proper car service to relieve the shortage. Railroad companies should not favor one locality at the expense of another even though it seems advantageous at the moment to the railroad property. In the long run the company will find it of advantage to build up industry all along its line rather than to concentrate certain classes of industry at its terminals. But even were this not true, the public creature of service, holding its power to do business as a gift of the people, must treat all individuals and localities with fairness, and should aid rather than obstruct the efforts of all its customers to grow.

Water supply companies for cities have less opportunity to deal unfairly with cus-

tomers than have transportation companies. But they can be annoying by furnishing adequate sized services to some customers and services too small to others. Their rates, too, may be inequitable, but this will be considered in a following article.

Electric light and power companies may, if they choose, greatly annoy and discourage certain customers by poor and interrupted service, while furnishing others with good service. A power company supplying power to a lighting company, or a railway company, and desiring to own those concerns, may cause them so much trouble that, not wishing to build independent plants, the minor company may be glad to dispose of its property to the larger concern. Such practices are those of persons who look upon business as war. It is asserted with some confidence that aside from the obligation of the publicly created corporation to serve all people with equity, it is good business policy in the long run so to do. The world is somewhat slowly learn-

ing that mutual confidence and helpfulness, courtesy, and fair dealing make for general prosperity, and that general prosperity is better than prosperity for the few and poverty for the many. Until all corporations shall realize and practice this doctrine, public control must be exercised over public service corporations, at least, to see that there is no inequity in the service rendered individuals or communities. It must be constantly remembered that government exists for the benefit of the governed — all the governed.

5. **Quality of Service.** — Although some railroad companies, some street car companies, and some lighting companies have been and are furnishing a quality of service poorer than is contemplated or called for in their charters or franchises, perhaps it remains for water supply companies to be most negligent in this respect. The franchise calls for pure and wholesome water, but the people must boil the company water, buy drinking water elsewhere, while paying the com-

pany to supply it, or subject themselves to the danger of contracting water-borne disease. The franchise calls for the maintenance of a given pressure at all times at the hydrants, and a higher pressure to be developed within a time limit upon fire call, or to maintain a certain number of streams of specified character. The plant designed for a small town has not kept pace with the growth of the community and the pipes are too small to deliver the water in the required volume at the specified pressure. Moreover the city is built on rolling ground, the outlying residence districts being fifty feet or more above the business district where tests are made, and there is no specification covering the place of the test stream. The company cannot begin to meet the franchise requirement of volume and pressure. The city is put to the expense of buying and maintaining fire engines to perform a service that the water company is under contract to perform. Perhaps rates have been insufficient to enable the company to live up to its contract, but the rates

have been those of its own making. Whether the company has distributed unearned returns or failed to collect proper charges, it is at fault. Complaints have been made in the press and by personal statement to the authorities having the power to control the quality of service, but nothing is done. The matter goes on from bad to worse till public ownership is advocated and perhaps accomplished, with no better results in service than before. Now that the public is serving itself without betterment of conditions, complaint is still made, but nothing is done until some great catastrophe like a typhoid epidemic or a destructive conflagration occurs, when people wake up to their obligations to themselves and demand better service from their officers. Experience shows that the situation is likely to be much the same under municipal or private ownership. Usually in the case of water works the public is provided with the power of control, but it does not exercise this power at the right time; it does not see to it

that plans on which the property is built are adequate, and when once the plant is built, the difficulty of correcting errors is so great that the correction is not forced. The people growl but do nothing. Enmity to the corporation grows, rates are questioned, and a generally unsatisfactory condition results. Service such as the franchise calls for would have developed satisfaction and satisfactory service will be paid for without much question of rates that are at all reasonable. With respect to water works there should be not only authority to control but there should be actual rational control from the beginning.

Formerly illuminating power was the chiefly desirable quality of gas. With the introduction of the mantle and the development of the gas range and gas engine, the chiefly desirable quality is heat units per cubic foot, and next is pressure. It is cheaper to make gas of low thermal value than it is to make it of high thermal value, and it takes more gas of low thermal value to accomplish an

operation requiring a certain amount of heat. With low thermal value, lights are dim and more are required; with low thermal value, gas cooking takes longer and consumes more gas, and with low thermal value, internal combustion engines work unsatisfactorily, developing less than full power. Because men are greedy and often unscrupulous, just as some farmer or distributor takes as much of the cream from the milk as he dares before he sells it, so the gas operator fails to enrich his water gas with the oils that give it heat more than he feels to be absolutely necessary. And just as government undertakes to govern the quality of milk that is supplied to the people, so government should see to it that the gas supplied by a gas plant, either private or municipal, is of the quality specified in the franchise of a company, or satisfactory to an owning public. Practically none of the older gas companies are at this time — 1917 — meeting their franchise requirements, which were for a given illuminating power when they were

anything, rather than a given heat value. This is of no particular consequence, but the provisions of the franchise should have been altered to meet the changed conditions so that the public might exercise proper control. Practically no one wants the illuminating power specified, but every one wants heat units and many people are paying for 600 unit gas and getting only 500 or 550 unit gas. The gas has value in proportion to its heat units.

At present for lighting or other purpose electric energy is sold most often by the energy unit, so much per kilowatt hour, with the current supplied at a specified pressure or potential. Generally it is to the interest of the company to keep the pressure close to that specified in order to give satisfactory service. Dropping the pressure does not have the same effect as reducing the heat units of gas. But often the company will allow outlying districts to have unsatisfactory service, rather than go to the expense of stringing larger wires or placing more

transformers to keep the pressure up. In many cases energy is still sold on a candle power basis for street lights, and in some cases a flat rate basis, so much per month per lamp of given rating, for other lighting service. When energy is sold in this way it is to the advantage of the supplying company to let the pressure drop, thus making and selling less power than is paid for. In administering power contracts for the use of alternating current it is of importance to control the frequency of the alternations since under some conditions it may be advantageous to the producer and of disadvantage to the consumer to vary the frequency from the specified standard. And so because of the greed of men, just as government inspects scales and measures to see that the greedy farmer or grocer or coal merchant does not sell under weight or under measure, so government, which exists to protect every member of the family from the greed and unruly passion of every other member, must exercise control over the quality of service of electric light and

power companies and see that they do not sell under weight or under measure.

Street railways have generally been fairly profitable concerns and perhaps oftener than not have given as good service as could be expected. But in many cases inadequate provision is made for rush hours of the day; sometimes poor management fails to keep the road open during storms; and occasionally a company provides less than decent accommodations for its patrons. Government control should be careful here, not more excess equipment for rush hours should be provided than can be afforded, but this limit should be determined and the proper equipment supplied. Government cannot manage the privately owned street railway, but reasonably decent equipment may be required, if the franchise gives the power.

Railway companies, being to a considerable extent in competitive business, have learned that it is good policy to give the best service they can. Some of them are not earning enough to keep all

of their properties in condition to render good service, and some have been guilty of financial operations that have paid to speculators moneys that should have gone into the upkeep of their properties. With proper capitalization, proper rates for service, a proper limit to profits, and a proper intent to be fair in dealing with patrons, railway service under rational public supervision is likely to be fairly satisfactory.

There are many annoying things in all services that cannot be controlled, such as surliness of servants, failure to give definite information to patrons when unavoidable troubles occur, etc., but these will right themselves as time goes on and the corporations learn that public confidence and favor are their best asset. But purely and only because of the greed of men is it necessary to exercise public supervision over quality of service, and this necessity is not confined to the control of public utility corporations.

CHAPTER III

RATE CONTROL

General Statements. — Rate control by government, while generally recognized as altogether proper has given more trouble than any other item of regulation. Volumes have been written on it, and courts have wrestled with the problem through pages and pages of decisions. It is not hoped to solve the problem in this short chapter. Some principles that seem to be fundamental to equitable control will be stated.

Rate control should be exercised with respect to three matters:

1. To see that the rate system is designed on scientific principles that provide for equitable charges to all classes of consumers.

2. To see that there is no unjust discrimination in applying the system, either

to individual consumers of service, or localities served.

3. To see that the rates charged provide a fair return to the corporation, but no more.

The problems that arise are most difficult with respect to railroads. With respect to water rates in cities, the difficulties lie mostly in the design of an equitable system of rates. With respect to electric light and power properties the difficulties are perhaps about equal in the design of the system and its equitable application, while with gas properties there appears to be a somewhat less difficulty than with water, owing simply to the absence of the one element of fire service. The telegraph perhaps offers the simplest problems; the telephone somewhat more complex problems.

A fundamental principle would seem to be that the basis of charge must be the cost of service. The value to different consumers of service rendered by a public utility is undoubtedly a variable. For different reasons a given quantity of water

is more valuable to one consumer than to another. The same is true of a given amount of electric power. The same is true of a given number of ton miles of freight service. But no one can measure the actual or relative values of these services. It is not a practicable thing to do, and hence the only basis for measuring charge for service is cost of service. It is not possible to measure exactly the cost of the particular service rendered any particular customer. The best that can be done is to get as near to this cost as is practicable. In some cases the charge based on cost may require modification because the cost of the service to a given possible customer may be more than he will pay, since it is more than a perfectly satisfactory similar service will cost him when rendered by a plant of his own.

Thus a high-grade filtered water may be supplied in the mains of a city at a certain unit cost. A consumer of large quantities who does not require filtered water may be able to supply himself for less than the unit cost of the filtered

water, when all elements of cost are included. But he may be willing to pay more than the actual cost of the pumping and filtering, and thus, if served, will pay something toward the fixed charges on the property and so somewhat lessen the burden that the great body of consumers would have to bear if the large quantity consumer were not supplied. Thus, in some instances, the value to the consumer will modify the cost basis of charge, and, if the plant is owned by the government, we find that much despised basis, "What the traffic will bear" adopted by the public itself when it gets into business for itself.

Again a certain possible user of large quantities of electric power may be able to supply himself with other power at a cost less than the complete cost of furnishing him power from the public plant. But, as before, he may be willing to pay the full operating costs and something toward the fixed charge, thus lowering the average charge to all consumers to something less than it would be were the

user of large quantities not served. And again, in the case of a governmentally owned plant, we find the public charging with perfect propriety "What the traffic will bear." In all such cases judgment must be used, short term contracts avoided, and the practice followed only when of advantage to the general community.

Certain classes of utilities, notably water supply properties and electric light and power properties, and gas properties have regularly recurring hours of maximum demand called the peak load. If the whole demand could be averaged over the day, the machinery could be worked more economically, and it could be of less capacity. Certain classes of customers require service always at the time of peak load and are indeed the creators of the peak demand. Residences and stores are apt to be among the principal creators of the peak demand of lighting services. Domestic use and fire service are the principal creators of water supply peaks. It should be clear that

those who create the peak should pay the average cost and the extra cost due to the peak demand. Those who use water or power only during the off-peak hours should pay no more than the average cost and there may be good argument for an even less charge. Some railroads also have peak loads. Street railroads are of this class with two daily peaks for which equipment must be furnished, which lies idle the rest of the day. And a curious condition is noted just here; the public demand for reduced rates often takes the form of a demand for a reduced rate for those who must ride to work in the morning and return in the evening, those who are actually the creators of the peak load. The demand for reduced rates at these hours is a demand for the application of "what the traffic will bear," but is based not on value of service nor cost of service but on ability to pay. Certain suburban lines of steam and electric roads have the same sort of daily peak load. Certain railroads have seasonal peaks, traffic of one kind moving in large quantities in

one direction at one season and traffic of another kind moving in the opposite direction at another season, or the same season, but requiring a different form of equipment.

Distribution of Fire Service and Street Lighting Costs. — Every water works property is built larger than necessary for domestic and manufacturing demands to provide the necessary quantity for emergency fire use. The distributing systems are always larger and more costly for this reason. Reservoirs may be larger or pumping plants may be of greater capacity for this reason. What beside the distributing system is of greater capacity and cost will depend on the kind of water system that is in use; whether a gravity supply from the mountains without pumps, or pumps and large storage reservoirs, or direct pumping with small equalizing tanks or reservoirs.

Whatever extra cost there is of a fixed character due to the extra cost of the plant should be assessed to the property

actually or potentially protected. Improved property in the water district is actually protected; unimproved property in the water district is potentially protected, having greater value by reason of being in the water district. Just how the fire service cost should be apportioned may be a question, but it is doubtful if a fairer distribution is practicable than in proportion to the assessed value of the properties taxed. Sometimes when water works are privately owned, the city pays what purports to be the fire and sprinkling cost, and collects this in taxes on property within the water districts, but sometimes on all properties indiscriminately according to assessed value. The same practice holds sometimes with respect to street lighting payments of a city to a private lighting company, and property neither actually or potentially served with lights is taxed to meet the costs. Whether the utility is privately or publicly owned, only those properties actually or potentially supplied with service should pay for the service.

Taxes. — Taxes and tax apportionments are curious things. Government must be paid for and presumably it is more valuable to the individual having much property to be protected than to the individual having little property to be protected. As a matter of sentiment one life is worth as much as another, but as economic units, cold-blooded logic says there is no such equality. But is the man of wealth worth more than the striving, honest worker of moderate means? This will depend on how he uses his life — and who shall say? The best that government has been able to do is to tax all men between certain ages equally a small amount called by various names, and all persons holding property another amount, depending on the nature and value of their holdings, both real and personal. Recently in the United States of America, an income tax has been levied by the national government. Taxes are collected from public utility companies and are generally looked upon as an expense to be deducted from earn-

ings before the net return that is called fair return is computed. Some business men may deduct taxes before estimating their net returns. There may be a good deal of circular reasoning here but it would seem that the man who estimates his net return after deducting taxes, pays no taxes on his own property, but collects his tax from those whom he serves. This certainly will be true if his net return is limited by law or regulation. He helps pay the tax of the persons who serve him and perhaps an equitable end is reached. But if property is taxed in proportion to its value, then, omitting certain items of personal property that have a market value but no earning capacity, except as potential earning capacity may be represented by a fair interest rate on their cost or worth, that value should be estimated not on what the property cost, nor on what it would cost to reproduce it, but on its earning capacity, actual or potential. Net rental value is the fair value of real estate; net earning capacity is the measure of fair

value of a business. And this suggests that the income tax is a fairer tax than a tax that is based on what are called physical values which in general are costs, actual, or estimated.

Men invest in government bonds bearing 3½ per cent interest rather than in bank deposits paying 4 per cent because the money loaned to government pays no tax and the security is gilt-edged. As a matter of fact, of course, the money loaned to government does pay a tax represented by a part of the difference between bank interest and bond interest, the remaining difference representing the difference in the estimated value of the security.

When capital is loaned to a business, the owner of the capital looks for a certain net return, and the interest he charges is based in part on what tax he must pay on his income or money and credit. Thus the user of the money pays the tax and charges it up to, and collects it from, those whom the business serves. It is generally recognized that a tenant

pays the property tax of his landlord, but with respect to temporary taxes for emergencies, perhaps this is not so.

When government owns and operates its own utilities, it probably collects in the form of rates or otherwise, sufficient taxes to pay the cost of the service, but collects no profit, nor properly any tax to be devoted to other expenses of government. When government allows a private person or corporation to own and operate its utilities, it must allow the cost of the service and a fair profit or wage for service. If a tax for general purposes is deducted from earnings before the limited fair return is computed, then the people served pay the tax on the utility property, a cost they would not be charged with if the public owned its own plant, and one which does not go to the utility owner as a part of his wage for service, but an amount that the whole public would have to pay in some other way if not paid through the utility rates. If, on the other hand, the limited fair return is computed before deducting

taxes, the utility seems to be paying its share of the cost of government. And with respect to emergency taxes, perhaps this would be true. But again capital wants its fair return, and unless competition for the use of capital fixes the rate, capital will not go into utility ventures for less than its fair return and the tax again comes back on the users of the utility service. That is to say in fixing the limit of fair return, the public takes taxes into account. Taxing theories and methods are curious as was stated in the beginning, but it is advanced that to conform as fairly as possible with theories and methods presently in use, public utility corporations should be untaxed, but the incomes from the holdings of bondholders and stockholders should be taxed. Whether this tax shall be collected from the corporation and deducted from interest or dividend payments, or collected from the individual security holders may depend on the nature and the location of the securities. That is not a matter of concern here, the only

point of interest here being the suggestion that taxes are not to be included as an expense when devising a system of charges to be equitable to the community served and to provide just a fair return for the service, and that the corporation as such is not to be taxed. Otherwise users of service pay a greater part of the cost of government than those who do not use the service. Whether or not this can be avoided depends on the tax system.

Wholesale vs. Retail Charges. — Without doubt rail service costs less when it is performed in car load lots than when performed in less units. Although sometimes denied, rail service costs less when performed by train loads than in single car loads. When service costs less, then, on a cost basis, less should be charged for it. But the right of the user of large quantities of gas, water, or electric power to a less rate than his neighbor, who uses a less amount, is not so easily established. Charges for these services may be divided into four elements based on cost.

1. Peak load costs, sometimes varying with the quantity used and sometimes not, as in the fire service cost of a water supply service.

2. Consumer costs, varying with the class of the consumer but not with the quantity of product consumed; as reading meters, interest, depreciation, and repairs on meters, etc., which are properly charged so much per consumer having a given sized service.

3. Output costs, varying closely with the quantity of product, such as cost of fuel, oil, waste, etc., in a pumping or power plant. This element does not exist in connection with a gravity water supply.

4. Fixed charges, less the part of this item included in peak load costs, and including general superintendence and items of expense not assignable to the other elements. This item should probably vary with the sum of the other three costs on the theory that those who cause the greatest expense receive the greatest value and have the largest interest in the

overhead of the property. In the interest of simple publicity and bookkeeping a simpler division of charges may be desirable even though it be somewhat less equitable.

As has been pointed out under another head the off peak consumer has a valid claim to a lower rate than the peak load customer, but this is not because he is entitled to a lower output rate, but because the peak load element is omitted from his charge. If at the same time he is a user of large quantities of product and tends by his large use to keep the plant operating at a higher efficiency than would be possible without his service, he may have a reasonable claim to a less output rate as well. This is primarily because he is an off peak customer; the peak load customer making equal quantity demands in general has no such claim. There is little justification, therefore, for a general output rate of several steps without reference to the relation of the hour of demand to that of the peak load.

If the output rate of the users of large

quantities of product is made the same as that of other users, except as they are off peak customers, the general level of rates will be lowered and those least able to pay will be favored as compared with their situation under the ordinary step system. The biblical adage " Unto him that hath shall be given " may be violated, but probably in the interest of the larger number and to the benefit of society. Too great development of off peak service may produce a new peak, which should be duly recognized. It is not unusual for light and power companies to hold domestic consumers to be the peak load creators and to charge them accordingly. This is not right. As has been said every consumer at a peak load hour is a peak load creator and should be so charged.

A distinction in developing this item of rate system design must be made between those properties that manufacture and store their product and those that must make their product as it is sold. Gas and some water properties can oper-

ate steadily at high efficiency, storing the surplus of the off peak hours against the use of the peak load hours. Electric light and power companies, railroad companies of all kinds, and telephone and telegraph companies manufacture their product as it is sold, but there is still a difference between them. All must maintain a plant and force equal to the peak demand and the necessary emergency surplus, and the electric light and power companies and telegraph and telephone companies sell their product as fast as it is made, telegraph companies making an output charge, telephone companies a mixed charge. But the railroad company must practically always manufacture more than it sells and the waste must be paid for by those who buy the used product. The railroad company manufactures transportation and every time a passenger train goes over a division, or a street car goes over its route, a certain number of passenger miles of transportation are manufactured. If the train or car is not filled all the way, some

of these passenger miles are lost. This is of less consequence with the street car because the universal charge is per trip and not by the mile. (It may be noted incidentally that the service value given different customers of the street car for a common price is very different and a proper adjustment of this matter should be made if possible.) Every time a freight train goes over a division, a certain number of ton miles, or pound miles, or hog miles, or horse miles, or cattle miles, or what not miles are manufactured. Very rarely are they all sold. Every shipper, who helps to fill a car, helps to reduce the cost per ton mile; every additional passenger in a train helps to reduce the cost per passenger mile; hence an argument for a lower rate to the shipper of large quantities or user of much passenger service, and also for the low rate to a shipper who will not ship at a higher rate, and the passenger who will go on an excursion only at a low rate. This will be further discussed under another head.

"What the Traffic will Bear" and Some Other Things. — To consider fully all the problems of a rate system for railroad service would require a volume, or possibly more than one volume of considerable size.

There is one basis of rate making that has been much despised by the public generally, that really often has much to commend it, and indeed in some cases, as has been shown under another head, is the only possible basis whether the utility is publicly or privately owned, and this basis is "What the traffic will bear."

What the traffic will bear is a term reproachfully used by the public when discussing utility rates, and particularly railroad rates. But let consideration be given to general business. A successful merchant purchases a bill of goods. His common practice is to add 50 per cent to the invoice price of the articles billed to make his selling price. Of course this rate varies and on some articles some dealers add very little, but 50 per cent is a not uncommon average. Out of this

50 per cent gross profit the merchant pays all his expenses, and hopes to realize a reasonable net profit on his business and on his invested capital. But he notes a few articles among those purchased that he thinks will stand a somewhat higher price and still sell. He uses his judgment, places the higher selling price on the tag and is at once guilty — if that is the proper word to use — of charging what the traffic will bear. The fact that the merchant is in competitive business makes no difference with this practice as a practice. Competition may limit the price but the method still obtains. This is not a guess at what the merchant does; this is what he does. He charges what the traffic will bear. But the merchant is one of the middle men, while the railroad, the water company, and the light and power companies are producers, manufacturers. And the practice of the manufacturer does not differ from that of the merchant. For certain staples a regular profit rate may be added to cost, but this varies with many conditions, and when

a new article is put on the market the selling price is fixed at what the traffic will bear.

What the traffic will bear is not all that can be charged without discouraging or preventing the purchase of service or goods. It is what is sometimes called the monopoly price, that price which, considering the factors of quantity, cost, and price, will yield the largest net return to the seller. And if everyone is charging what the traffic will bear, every one is getting the most that he can for the service he renders. And is not this a desirable condition in a business community not completely controlled by government? It does not mean the simple quiet life that may be really the most desirable achievement of society; it means what is generally called prosperity and progress, whether or not the resulting appearance of prosperity and progress is of the real things. It does not mean war nor the application of "civilized?" or barbarous war methods to business. It often means helpfulness to the develop-

ment of business and real economy as has been pointed out in the discussion of whole ale *vs.* retail charges. The development of the Ford Automobile industry is an example in point.

But in connection with public utilities it should be the price charged only when it will serve to lower the average cost of service to the public, or will develop a legitimate, natural, and desirable business that cannot be developed without some concession in rates from the average of its class. This is true, of course, only when the utility is under rational public regulation, or the practice is necessary to produce the fair return to which the company owner is entitled. For a business so varied as railroad service in which the cost of a particular service cannot be determined, what the traffic will bear is the rational basis for a tentative rate design. If it is found to yield more than is judged to be a fair return, then under proper regulation provided for in the charter of the utility corporation, a general scaling of rates may be

ordered, or certain necessaries of all people may be selected for lower rates to reduce the earnings to the proper fair return. The business cannot be made to pay more than the return based on what the traffic will bear, and if this is not the full limit of fair return, the business must be classed as a failure or only moderately successful.

What the traffic will bear is not always the wicked thing it has been so often thought to be; it is not necessarily an oppressive rate; it is what all business men are trying to charge whether they are in competitive or monopoly businesses; and it is improper in the case of a public utility only because and when it is oppressive or produces a return larger than the fair return to which a corporation performing a public function is entitled. It is just as improper when a dealer in necessities takes advantage of troublous times to oppress the people.

It may be a question for argument, but it is asserted with some confidence that a rate system should not destroy natural

advantages of location. In this is involved the long and short haul question, water or other competition, and possibly some sociological considerations. Should a place located on a high mountain and reached over steep grades and sharp curves costly to operate, have the same rate from a given center as a more favorably located place with the same length of haul over a fairly straight line with low grades operated at much less cost? Is a railroad expensively built through a hilly country between two termini, but necessarily so built to give needed service to the territory through which it passes, and relatively costly to operate over high grades and sharp curves, entitled to the same rate of return as the less costly line built with low grades and light curves, along a valley between the same termini, and so built to give a needed service to the territory through which it passes? And if so, how is this to be brought about? Rates between the termini must be the same, or even less by the probably slower hill line as an

offset to the longer time required for the trip, unless through business is neglected by this line. Can intermediate rates be the same per unit and give equal rates of return to the two properties? If government owns and operates the two lines, what will it do if it is not operating them as a revenue producing function, but only to earn the costs?

What real advantage have towns along the lower Mississippi river over towns along a somewhat parallel line some distance east or west, by reason of the actual or potential water competition made possible by costly work performed by government to create a free open channel, and what advantage have towns along the Erie Canal over other towns in New York, by reason of the expenditure of millons on millions of dollars of public money to provide a free water highway? Just how much advantage has San Francisco over Fresno on shipments from New York, and on shipments from St. Louis, and on shipments from Chicago and on shipments from Denver, because

of water competition through the Panama canal? What would government do in these cases if it were conducting the rail transportation but not the water transportation, and what would it do if it were conducting both? On the answer to "What *should* government do?" should depend the view of regulating bodies toward the properties under their authority.

But it is suggested that the advantage of favorable location should not lie wholly with the public served. The more favorably located railroad should be allowed a more favorable return if this can be done without destroying the advantage of location of the communities it serves. The fair return is not so nearly a fixed quantity for railroads as it is for utilities of other kinds.

Discrimination and Fair Return. — Concerning discrimination and fair return little can be said without going into a long catalog of improper practices of utility corporations, on the one hand, or discussing the question of Chapter Four

further on the other hand. All right thinking men abhor unjust discrimination of any kind or the display of unwarranted favoritism in any activity of business or political life, and it is fair to say that almost all utilities, and notably railroad companies, have been gross offenders in these directions, with respect to both individuals and localities. No excuse for them is offered. Wherever they are still offending they should be punished and the practices stopped. And this is about all there is to be said, except that in some cases what appear to be improper discriminations will develop on investigation to be altogether proper differences based on different conditions of service. Thus great care is needed in the examination of such intricate things as railroad rates in order to establish the fact.

With respect to the duty of a regulating body to see that the utilities under its supervision earn fair return and no more, the following may be suggested. When an engineer is employed to super-

vise the construction of a great work being performed under contract, it is his duty to help the progress of the work. He is there to see that no dishonest work or improper material goes into the structure if attempts are made to defraud in these ways; but just as much is it his duty to do what he can to forward the work, assisting rather than nagging or hindering the contractor, all to the advantage of his employer. Just as is the duty of the engineer in supervising a great work so is the duty of a public utility regulating body twofold — positive and negative. It is just as much the duty of such a body to try to make the attitude of the public toward the corporation to be fair, as it is to insist that the corporation shall be fair in its dealings with the public. Some regulating bodies have succeeded very well in their dual task; others have failed, because they have sought to curry favor with an uninformed and properly suspicious public, rather than to learn the truth and inform the people. Full publicity concerning its affairs is the

safety valve for every public utility owner, and regulating bodies should see to it that such publicity is had together with properly fair interpretations of all statements or practices likely at all to arouse questions. Fair dealing and open minds are essential to comfortable living together of people with people, corporations with corporations, for they are but people with people, and people with corporations.

CHAPTER IV

WHAT IS FAIR RETURN

Men go into business to make money. Men invest their money in business to make more money. In the United States of America at this time, if the business is an established business seemingly certain to continue without serious interruption, men may be found who will invest their money in it, if it seems quite certain to yield about 5 per cent on the investment. If it is a little less certain, 6 or 7 per cent will be required to interest persons with money to invest, while if it is a brand-new business just starting, the element of chance will require the prospect of a much higher rate to induce men to put their money into the venture.

When one enters business for himself, to be managed by himself, he hopes to make the business earn for him:

1. Its operating expenses including a

reasonable salary for himself and such depreciation allowances as may be necessary to maintain the involved physical property in normal condition.

2. At least savings bank interest on the money he has invested.

3. A profit that shall be commensurate with the risk involved in the business and the magnitude of the business done. This last measure of a proper profit — the magnitude of the business done — is sometimes overlooked.

When one invests his money in a corporation, the business of which is new and untried and is to be managed by certain officers and employes of the corporation, he expects that his money so invested will earn at least savings bank interest and a profit commensurate with the risk involved in the business.

One who invests his money in a new banking business, one of the more stable and certain of businesses, expects that his money will earn not less than 10 per cent and hopes for and usually receives considerably more than 10 per cent,

which is partly paid in dividends and partly by payments to the surplus fund, which is really a reinvestment of profit that increases the value of the stock. When the business is well established and is earning an average of 10 per cent on the par value of its stock, men will be willing to invest in this stock at such prices as to make their return less than 10 per cent, and often as little as 5 per cent on the investment.

One of the great banks of New York pays regular dividends of 25 per cent quarterly, or a return better than 100 per cent annually, and occasional extra dividends of 100 per cent, and its stock is quoted at more than 40 times its par value. It does an enormous business with a relatively small capital. It charges for its service no more than its service is worth else it could not do the business in competition with other banks. There are numerous other banks whose stock is worth several times its par value because of the large returns on the originally invested capital, and the existence

of a large surplus, which returns and surplus have been realized by doing a large business with a relatively small capital.

When one goes into any manufacturing business or into a contracting business involving considerable risks he figures to receive a large return because of the risk of actual loss or very small or irregular return, which frequently results. He plans to make from 50 to 100 per cent if all conditions prove favorable and to make 10 per cent if conditions prove to be as unfavorable as he thinks at all possible. Not infrequently conditions prove more unfavorable than he thought possible or he makes some mistake or oversight in his estimate and as a result he loses money; on the other hand occasionally conditions prove to be much more favorable than he had hoped for and he makes a large profit. The thinking public permits and expects such profits.

The rate of return is frequently figured in ordinary business, not as a rate on the amount of capital actually invested but as a per cent of the business done. A

corner grocer in the suburbs charges a large profit rate on very small sales that he may earn a modest living without actual profit, while a Marshall Field, a Wanamaker, or a Woolworth collects a smaller profit on very large sales that he may earn for himself or his company a moderate rate of return on the invested capital, which moderate rate will yield a large annual income.

If on a capital of $1000 a small dealer does a business aggregating $10,000 gross, he hopes to make, say, 10 to 15 per cent on the $10,000, or 100 to 150 per cent on the capital actually invested, but this is not profit; it is salary, sometimes mistaken for profit. As the extent of his operations increases and he eventually does a business of $100,000 a year, he may hope for a net return of 5 per cent or more on his gross business over and above salary. As his business grows he invests more capital which he takes from his profits or borrows from the bank, and he does a business amounting to $1,000,000 gross. On this he hopes to earn from 2½ to 3 per

cent, or perhaps 15 to 25 per cent on his actually invested capital. When his business amounts to $10,000,000 a year he is content with perhaps 2 per cent profit or even less on the gross volume of the business since this will yield from 10 to 15 per cent on his actually invested capital and this has gotten to be so large that a smaller rate of return enables him to live in the manner he chooses, and the business is established and safe. He could probably incorporate the business and sell the stock on a 5 or 6 per cent return basis, pocket the resulting profit, invest it in safe securities yielding 4 or 5 per cent and spend the remainder of his days in such activities as might please him. This is the successful man — the more than average successful man. It is a lamentable fact that the average man in business is a failure so far as his business results are concerned. He may not go into bankruptcy but he takes $20 a week or $100 a month out of the business as a salary, charges it in expenses and makes no profit at all, not even interest on his

actually invested capital. Such a result cannot be called success.

These considerations seem to indicate that in private business there is no rate of return that can be called in general a fair rate of return. Any business man or corporation seems to be permitted by common public consent to earn any rate of return on the actually invested capital that is possible by honorable dealing.

In general business then there is no standard for determining a fair rate of return. The laborer is worthy of his hire and whether he makes his talents return an hundredfold or only tenfold, he has earned no more than a fair return if he has dealt honestly and has not defrauded or oppressed his neighbor. Indeed, a fair return in general business might be defined as any return a business is able to earn by fair and honorable methods.

Does the same definition hold for public utility properties? In considering this question it must be remembered that men go into the business of furnishing public service — service that is generally recog-

nized to be a proper, if desirable, public function — for exactly the same reason that men go into any other business, namely: to make money. Perhaps this is not the most laudable ambition and it may be that it is not to be compared favorably with the ambition of the scholar in pure science, whose ambition is to discover something new and valuable to the world, but it is an ambition regarded as worthy by most men, possibly because it is the principal ambition of most men. And it seems fair to say that the business man, who has reached the point where he is satisfied with simple interest on his money has passed the period of greatest usefulness to his community and to the world unless he devotes his life to gratuitous public service; he has lost his ambition to create wealth (it is thought that the successful distributor of wealth is almost certain to be also a creator of wealth), he has lost a human quality most essential to the material progress of the world. Let it be granted at once that material progress is not more im-

portant than spiritual progress if indeed it is as important, but, also, let it be recognized that material progress is essential whichever may be deemed the more desirable.

If then we prefer to have men of ambition and courage undertake to serve us in certain ways rather than to serve ourselves; to provide our water supplies, our light, heat, and power, and our transportation facilities; must we not expect to permit them to earn at least as much as men of average success earn in other businesses of equal risk and magnitude? It is recognized that "equal risk and magnitude" is a well-sounding phrase, an attempt to become acquainted with which will develop difficulties. On the other hand, if we give these men of ambition and courage the practically exclusive privilege of supplying us with certain necessaries of life, may we not say to them, "You must deal fairly with us. You must charge us no more than the service is worth, and this must be determined by its cost to you, because its cost

to you may be considered to be what it would cost us to serve ourselves. To this cost to you we shall expect to add a good profit to pay you for relieving us of the burden of serving ourselves but we shall look to you to see that this profit is not more than successful men in private business of equal risk and investment expect to earn. Come, let us agree as to what this shall be and how we shall treat and share from time to time in the beneficial results of advances in the art of furnishing the service you propose to furnish."

It may be that the fair return will depend on the nature of the business. The furnishing of an absolute necessity, like water, by a monopoly company should call for a less rate of return than the furnishing of a luxury like gas or electricity for two reasons:

1. A sociological reason — because absolute necessities should be supplied always at the lowest possible cost.

2. A business or economic reason — because there is less risk in developing a

property to supply an absolute necessity, for which there is no practicable substitute, than in developing a property to supply gas or electricity, either of which is always in partial competition with the other and both in partial competition with oil, and in potential competition with new developments. To be sure as time goes on gas and electricity seem to tend to become necessities, but there is always much more to be done to develop this condition than to develop the necessity for a pure water supply, although the possibility in the development of demand is much more unlimited than is that of developing a demand for water. Though the demand for water may be limited yet water will always be needed, it will never go out of style or be superseded by something better. Gas properties have already suffered by the introduction of electricity, and the art of electric lighting and power development and transmission is advancing so rapidly that new machinery and appliances of today must be discarded tomorrow, and

not even large functional depreciation allowances will offset the considerable risk that must be recognized as a reason for allowing a high rate of return.

Again different businesses require differing ratios of capital to annual volume of business done. The successful private mercantile business has as a rule gross annual receipts far in excess of its invested capital so that 2 per cent of the gross annual receipts may mean from 6 to 20 per cent of the invested capital, while in a railroad business one finds exactly the opposite condition. The invested capital in such business is always larger than the gross annual receipts, so that as an average for the United States, perhaps it is fair to say that a profit of 20 per cent of the gross annual receipts will mean not more than 5 per cent and perhaps less on the honestly and reasonably invested capital, so that a relatively large rate of return measured as a percentage of business done must be allowed such enterprises in order to make the return measured as a percentage of in-

vested capital compare favorably with the returns of purely private enterprises.

The legal rate of interest in a given state or country may influence the conclusion as to fair rate of return. If the legal rate has been determined by the people to be 6 per cent and not more than, say, 8 per cent may be charged without involving the charge of usury, then it would seem to be clear that 6 per cent, or even 8 per cent, is not enough to warrant a company in investing its money in a business that requires effort and the taking of certain risks, from both of which the money lender is free, when he lends on good security.

Again, should public utility business share in general prosperity and depression, or should it earn steadily at a given rate? Here the nature of the business will control somewhat. A water supplying corporation will feel changes in business activity perhaps less than any other form of public service; railroads and power supplying concerns will of necessity feel business changes in larger de-

gree. Their rates cannot continually be changed by publishing discount sheets affecting a base price, and hence as a practical necessity they must earn more during prosperous times than during dull times. It is very desirable that the securities of these corporations owned at large by the general public shall remain fairly constant in value, changing only slowly, and hence the fair rate of return should lie somewhere between a proper upper limit for prosperous times and a proper lower limit for dull times, if such limits can be fixed.

Most of the foregoing matters are of concern to private business as well as to privately owned public utilities. The two are unlike only in the greater degree of control exercised by government over public utilities and the fact that these are as a rule more nearly monopolistic in character than private business, which though not always so, is more often entirely competitive. Because of the monopolistic feature of public utility service, a feature in some cases less existent

than is often supposed, such enterprises should be subject to many more restrictions than private business and they should be limited to a moderate rate of return on their invested capital, some persons believing 6 per cent to be sufficient. The considerations thus far developed ought to indicate that no uniform rate of return can be fixed that will be fair to all utilities; that we cannot expect business men to go into public business with an expectation of earning less than they could earn with any success in other enterprises of equal risk and magnitude, because they go into public business for the same reason that they go into private business — to make money, and until private business is limited by law, there would seem to be no good reason to limit the earnings of privately owned public utilities to less than the return of the average successful private business of equal risk and magnitude. No definite percentage can be fixed as measuring this return, but that it is more than the 5 or 6 per cent that some would fix as the limit, a glance at a purely hypo-

thetical but entirely reasonable example will serve to show.

The banking business, while competitive and complex in its details, is in general theory one of the simplest businesses to reason about and being pretty well controlled by law furnishes a fairly good example from which to begin reasoning with respect to other business. It involves some risks but when well managed is perhaps reasonably free from most of the risks attending many other businesses. The banking company has capital invested, and generally the law makes it necessary that its capital shall be all actual, that if $100,000 of capital stock is issued, $100,000 of cash must be behind it actually paid into the treasury of the company. The banking company has operating expense consisting of rentals, stationery, printing, advertising, wages, and other incidentals, and interest paid to depositors, really lenders to the bank. It performs service for its depositors, stores their money, furnishes them with books, checking blanks, etc., and

pays out their money on their order, keeping track of receipts and payments. For the use of the depositor's money, the company pays this service and from nothing to, perhaps, 4 per cent interest. The rate depends on the character of the deposits, savings, or open account money, and their magnitude; very large open accounts receiving, perhaps, 2 per cent on the average daily balances, small accounts nothing.

The banking company lends its own and its depositor's money to others and charges from 5 to 8 per cent or more depending on the size of the loan, the nature of the security furnished, the law fixing the maximum rate, the demand for money, and competition, although there is little variation in the rate due to competition. It also has a small amount of incidental charges for commissions, protests, etc. As a result of its charges and expenditures the company may clear from 1 to 2 per cent on its loans; that is to say, if the average charges are, say, 6 per cent, then from $\frac{1}{6}$ to $\frac{1}{3}$ of this, or

16⅔ to 33⅓ per cent of its charges, or gross business, is profit.

If a banking company with $100,000 capital has loans amounting to $1,000,000, which is a not uncommon ratio, and its average interest charge is 6 per cent yielding $60,000, and if 1½ per cent on the loans, or a quarter of the charge is profit, the banking company earns net $15,000 or 15 per cent on its invested capital. This is not at all an unusual or peculiar result of the operation of a moderate banking business in a moderate sized community. If the loans are two million dollars with the same ratio of expense and profit, the net earnings will be 30 per cent on the capital, while if the loans are only half or $500,000, the net earnings will be but 7½ per cent on the capital. Of these two latter conditions the first is rare and represents unusually profitable business, and the second, though not to be called rare, represents somewhat less than an average success in banking. It will be noted here that the gross business done — the gross charges for serv-

ice — may be either less or more than the capital invested. Generally they will be less. In the normal case cited, perhaps 5 per cent may be called interest, or money wage, and 10 per cent profit, or service wage.

If the foregoing is fairly representative of the conservative business of banking — a business hedged by regulatory statutes, and such results are recognized as fair and reasonable, does it not appear that we should hesitate to limit any public utility to a 5 or 6 per cent return on the capital reasonably invested?

Another consideration may be suggestive. About the best security offered money lenders is real estate. Of this, farm land is considered better than urban property, some banking laws permitting a larger percentage of bank capital to be loaned to one person on farm lands than on city property. But these laws usually provide that not more than half of the value of a given property may be loaned on the property as security.

Quite generally, outside of banking practice, real estate loans are limited to half the value of the property offered as security. Public utility properties are built on borrowed money, for whether, as is frequent, they are built on the proceeds of bonds sold, or on stock sales, or both, the money is that of individuals loaned to the company. The security is in general not a value represented by the cost of the property, because the property once built has nothing but salvage value except as it has earning capacity. Its earning capacity is its principal element of value and this is, therefore, the principal element of value that stands as security for the money loaned. In practically no case of a new company would this security be as good as real estate security. There is more of the element of chance involved. Therefore, it would seem that the ratio of apparent security to loan should be greater than is customary in real estate loans. This means that the expected earning capacity should be at least, and usually is

more than, twice the fixed charge or interest on the money invested. As a general thing corporations have to pay, including the effect of discounts, from 6 to 10 per cent for the money they borrow in the beginning, less after they are well established.

Hence it would appear that on the primary investment a total expected return of from 12 to 20 per cent will be necessary to attract conservative capital to such enterprises. Approximately half of this represents interest, wage of money invested, and the rest is profit, or wage of service.

Now without question when business properties, any of them, purely private or privately owned public utilities, are firmly established and earning, say, 15 per cent on the outstanding capital, there will be those who will be glad to buy the securities on a 5 per cent basis, and the market price of the stock may be 300, or three times its par value. The stock may then be increased — watered as it is sometimes called — to three times the

original amount, and the increase distributed gratis to the stockholders of record. Other things may be done that are less defensible. It has been not uncommon for public utility corporations to keep their evidences of capital, bonds and stocks, at such an amount that the return should appear to be not more than from 5 to 8 per cent, largely because of the fear that the public noting larger returns would take action to reduce the earnings. This would be made unnecessary by a reasonable attitude of the public toward its service corporations; a realization that those engaged in public utility work are not public agents entitled to a wage only and *guaranteed that wage*, but that they are business men engaging in a business for the same reason that other men engage in other business with no *guarantee against failure*, and that subject to certain limitations of fair dealing when supplying common necessities, or doing a monopoly business, they are entitled to make their talents earn other talents just as other business men, praised

for their foresight, judgment, and ability, make their talents earn other talents.

It has been said that when government gives a monopoly franchise, it guarantees a fair return because the monopoly may charge enough to secure it. If one rate will not do this, another will. Perhaps this would be a nice question of economics to discuss, were it not that it is pretty well settled by the fact that there have been numerous failures of first efforts in developing public utility properties and not all of them chargeable to improper financial manipulation, or defective accounting.

Must not the conclusion of the matter be that the "fair return" on the "fair value" of a public utility property, that the courts have talked about so much and have judged to be the right of every public utility corporation to earn, means any return the corporation can earn by honorable methods when operating freely without rate regulation, so long as it does not exceed on the reasonable investment the rate of return expected by the man

or corporation of average success in other business of equal risk and magnitude. And may not the rate exceed this average successful rate if thereby incentive is given to develop economies in which the public may share?

Is there any other fair conclusion to reach so long as there are no guaranteed minimum earnings? As the business becomes established and safe, the risk is reduced and earnings on later investments should be less than on the original investment, but there seems to be no good reason for limiting the rate of return on the investment made up to a given time of inquiry, to less than the company has been able to develop by honorable means.

It is not intended to suggest that when a public utility business is established on a 15 per cent dividend basis, for instance, and is sold to others on a 5 per cent investment basis, or has its stock increased and distributed gratis to its owners to capitalize the earning capacity, it is still entitled to earn 15 per cent if it can on

the new capitalization, which is not the reasonable cost. The reason is, of course, that the risk that pertained to the original investment does not pertain to the established property; otherwise it could not be sold on a 5 per cent investment basis; and by so selling it or by distributing additional stock gratis to the stockholders, those who assumed the risk of the venture have capitalized their full reasonably allowable risk profits and are not in fairness entitled to earn risk profits on the new capitalization.

Their greatest risk may now be the risk of public regulation. A single instance may illustrate. A certain corporation after many vicissitudes finally became prosperous and was earning about 13 per cent on the reasonable cost as estimated by a public regulating body and was slowly but steadily increasing its earning capacity. The regulating body after discussing rates of return necessary to induce capital to enter public service, recognizing that there were risks involved and quite naïvely admitting that the risk

of public regulation was one of these, determined a 7 per cent return to be sufficient for the class of service under consideration, and proceeded to establish rates for the corporation that would practically cut its earning power in two, and would prohibit further increase. Assuming that the estimated reasonable cost was properly equivalent to the investment, the principles of fair dealing intended to be developed in this discussion were violated by the action of the regulating body of the foregoing example.

It does not seem necessary to introduce the innocent stock purchaser argument to sustain this point, but it may be introduced to complete the argument. Let it be supposed that certain persons — it is not necessary to call them widows or orphans to add the element of sentiment to strengthen the argument — have invested in the stock of the corporation on a 5 or 6 per cent or even on the 7 per cent basis deemed fair by the regulating body. What happens to the investment of these persons? Their investment is

immediately reduced to a 2½ to 3½ per cent investment, and their very living may be in danger. True, they might have invested in safer securities yielding 5 or 6 per cent, free from the vagaries of public regulation, which was one of the risks they assumed when making their purchases of the public utility stock, but it is submitted without fear of contradiction that the risk of public regulation should not be the chief risk of an honestly and honorably conducted public business yielding no more than a successful business man's profit on the reasonable investment necessary to create the property.

The conclusion from the considerations of this chapter are:

1. That the fair return to a public utility corporation is any return it is able to earn by fair and honorable dealing so long as this is not more than successful men in other business of equal risk and magnitude earn on honestly and reasonably invested capital.

2. That the age and firmness of estab-

lishment of the business may be considered in determining the risk; but —

3. That any earning capacity a corporation has developed by honorable means and public permission, expressed or tacit, at the time it is first under investigation, except from rates tentatively permitted in the course of regulation, is property not to be taken away without compensation except as definitely provided for in the charter or franchise.

4. That because their securities are so largely held as trust funds or widely distributed among the people as permanent investment, utilities subject to large fluctuations in earnings with changes in business conditions must share in the general prosperity of good times as well as in the leanness of dull times in order that their return may be fairly constant.

5. That public regulation should not be the greatest risk of any honorably conducted business.

6. That public utility corporations should be content with returns equivalent to those of average success in other

business of equal risk and magnitude, and except as they should be allowed to continue any return they may have acquired at the time of first investigation, they should be limited by public control to such returns as mark average success in other lines of equal risk and magnitude.

7. That in general a fair return on the primary investment in new concerns when measured as a percentage on the reasonable actual cost of a property and including interest and profit is from two to three and one-half times the going rate of interest on commercial loans; the lesser rate for properties of such risk and monopoly character as water works built under favorable conditions; the greater for properties of such risk as railroads built through new territory; fair return to properties of intermediate risk falling between the higher and lower limits named. The definite figures are given somewhat hesitatingly and as suggestive rather than as finally determined.

8. That in general for successful going

properties of any kind, minimum fair return on new capital for ordinary betterments and additions will be from once and one-half to twice, the rate at which the company owner can borrow money; while for large extensions equivalent to new properties the return should be as for primary investment in new concerns.

9. That after the minimum fair return has been reached, in order to encourage wide and economic service, the profit or service wage, measured as a percentage of capital, should grow with growth of service and reduction in rates; the interest or money wage remaining at a constant rate as long as the borrowing rate remains constant and changing only with that rate. The profit rate, expressed as a percentage of operating cost or income, should grow less with increase of magnitude of business.

10. That under continuous regulation the equation given below may represent a fair return over and above all expenses. In this equation I is the total invested capital, C is the annual operating cost

including all items except fixed charges, and r is the rate at which the corporation can borrow money.

$$\text{Fair return} = rI + 10\,rC^{\frac{7}{8}}.$$

The application of this equation pays interest, the wage of money, at the rate r on all capital whether represented by bonds or stock, and a profit rate for service that grows less as the business (cost) is larger, though the gross money profit grows with the growth of business.

If r is 5%, the rate on C is about 16% when the business (cost) is about $10,000, and 5% when the business is $100,000,000. The expression is such that extension of business on a given capital is encouraged, and as in other private enterprises it will be found profitable to do business with borrowed capital so far as this may be safe. Public control must be exercised to see that operating costs are not inflated.

Again definite figures are given with diffidence. The coefficient 10 and the exponent $\frac{7}{8}$ of the second term may be

subjects for discussion and gross income may be used in place of operating cost. The principle seeming to accord with commercial practice is thought to be sound.

CHAPTER V

VALUATION

Purpose of Discussion. — The art of valuing public utility properties is by no means as yet an art with fixed principles. Engineers, economists, and jurists differ one group with another and as individuals within groups concerning proper procedure in determining value and even as to what constitutes value. It is the purpose of this discussion to set forth certain views concerning what constitutes the value of a public utility property, the principles to be observed in estimating value, and the principles to be observed in estimating certain other basic quantities commonly, but, perhaps, unwisely called "value" for one purpose or another, as "Value for Rate Making," "Value for Capitalization," "Value for Taxation," etc., and to mention some of the many perplexing problems involved.

For definiteness of statement and illustration a railroad property will be more particularly considered.

Depending for conviction on the seeming fairness of the positions taken, little argument will be used, but the rather will didactic statements be made for the most part, with occasional brief statement of reasons, where this seems necessary. Arguments concerning most of the points raised — not always by any means supporting the views now to be set forth — may be found in a considerable recent literature on the general subject, a quite complete bibliography of which brought down to July, 1913, has been published by the American Society of Civil Engineers, and after being extended to December, 1915, has been again published by the American Electric Railway Association. No extended bibliography will be given here, but attention may be called to the work of Robert H. Whitten in two volumes, which, without itself presenting generally positive conclusions of its author, does present the essentials of

most of the court and commission decisions that have been made on questioned points; and to the report of the special committee of the American Society of Civil Engineers appointed to study and report on this general subject. A progress report was made in 1913 and caused much discussion. A final report has been made and is published in the December, 1916, Proceedings of the Society. Since then a work by C. E. Grunsky "Valuation, Depreciation and the Rate Base," and one by Harry Barker "Public Utility Rates," have appeared.

VALUE

But One Normal Value. — There is but one normal value of a commercial enterprise owned and operated for gain. That value is what is sometimes called the exchange value or the market value, and is measured by the sum that will be agreed to in a sale by a willing, intelligent, and solvent owner to a willing, intelligent, and solvent buyer. It is not the price that may result from a forced sale,

or a sale at auction. The sum that measures the exchange value depends most largely on the dependable net earnings. The dependable net earnings depend not only on the volume of business done, and the efficiency with which it is done, but, also, on the character of the regulation, if there be regulation, as there now is throughout the United States. It depends in part on the rate allowed by the regulating body to be charged for service and hence the courts have said that value for rate making, that is the sum to be used as a basis for determining the fair rate of return to which the courts say a public utility is entitled, cannot be the value based on dependable net earnings since these earnings are dependent on the rates and the result would be to reason in a circumference. This point will be discussed farther on. The normal value, then, of a railroad property may be said fairly to be the dependable net earnings capitalized at an agreed going rate of interest, less any cost necessary to restore the physical

property to normal working condition if it is found in any particular to be below such condition at the time of valuation.

There are exceptions to this rule for value. The value of a particular property to another property proposing to purchase may be more than its capitalized dependable net earnings because of the additional earnings it will bring to the purchasing property, as, for instance, a feeder line unprofitable in itself but of value to the purchasing line because of the addition of traffic at paying rates to the purchasing line. In such a case it is total dependable net earnings resulting to the purchasing property by reason of the purchase that should be used as the basis for determining the value of the feeder to the main line. The price agreed upon in a sale will probably be a figure somewhere between the value of the line as an independent property and its value to the purchasing line.

Branch lines of main lines are often built and owned by separate corporations and then leased to the parent company

or controlled by the parent company through some legally proper process which leaves the branch line a separate property in law although in effect a part of the property of the parent company. In connection with a public question, as a matter of equity, the two properties generally should be considered together when finding the value of either one, although in law they are separate properties. If considered separately the branch line might show a very small value, possibly no more than salvage value, and the main property a value larger than would appear without the effect of the control of the branch line. This might lead to an inequitable solution of the question at issue.

A new property just about to operate or but recently opened has no dependable net earnings, but normal value here will be the capitalized estimated net earnings, although it would appear that if the property has been well planned, it will be worth at least what it cost, and it may be that cost in this case will be a better

measure of value than capitalized estimated net earnings. This will depend on the judgment of owner and prospective purchaser and for such a case no set rule can be formulated; one man may see possibilities that another does not.

Uncertainty concerning the future of properties created and existing under short term franchises may require a modification of capitalized net earnings when finding the normal value. Public utility properties are generally permanent properties; few are ever discontinued; once created, the service rendered becomes a necessity, and at the expiration of the franchise the particular owners must secure a new franchise, or dispose of the property to another company owning a franchise, or to the public. Possible changes in the terms of a new franchise, making it less or more favorable to the operating company than the old franchise, or probability of a favorable or unfavorable sale of the property at the expiration of the franchise will be of in-

fluence in fixing the normal value of the property. These things affect the dependableness of prospective earnings, and capitalized present net earnings will certainly be discounted if the future appears to be less favorable than the present. It must be distinctly borne in mind that neither a rating case nor "fair value" for rate regulation is being considered now, but simply value, which for any permanent business property at any time can have for its basis nothing but earning capacity present and prospective.

The value of a railroad is not constant. It rises and falls inversely with the value of money and this may be temporarily affected by many things other than supply and demand; it rises and falls with changes in men's attitudes and whims, regardless of earning capacity; it changes with the changes in the public's ideas of regulation; and it changes with changes in business conditions. But at any given time if dependable net earnings can be fairly well determined or estimated for a given independent whole property for a

little time in advance of the date of valuation, those earnings furnish the best possible basis for estimating the normal value of the property at the date of valuation.

Almost every day small independent light and power properties are being absorbed by larger corporations controlling the plants of a number of cities, and buying more with a view to operating a number of plants from a single central station and so affecting certain economies while building up a large business. Valuing these small plants has become the principal business of some engineers and they generally value on a basis of cost of reproduction less depreciation modified by a consideration of probable net earnings. Although these plants have limited franchises, the effect of the consideration of net earnings is practically always to increase the purchase price over cost of reproduction less depreciation and, indeed, over the investment that the owner has made in the plant. Therefore a price is usually agreed upon which is some-

where between capitalized net earnings less depreciation and cost of reproduction less depreciation. The value as shown by the trade in such a case is based on neither capitalized net earnings nor reproduction cost, but both are considered in arriving at a final compromise price which for the time must be considered to represent the value of the property, although it is not the normal value. The same result would likely occur if a powerful corporation should attempt to form a number of independent small railroad properties into one large property. But railroad charters, being practically always perpetual, the normal value of the final property must rest on its earning capacity.

Again it must be stated that no question of regulation is under consideration — simply the business value — the normal value of a business property, a railroad, is being considered.

Professional investors in railroad securities try to keep track of the physical condition of properties in which they are

interested so that the market price of securities very often, perhaps usually in times of ordinary business activity, approaches quite closely to the exchange or market value of the property. But temporary fluctuations in business conditions and occasional neglect of maintenance that does not become known immediately, and peculiar stock market manipulations, as well as unexplainable variations in men's ideas, make the market prices of securities unreliable as an entirely satisfactory measure of normal exchange value.

To find the Value of a Railroad Property. — The normal value of a railroad property being its capitalized dependable net earnings less depreciation, the preliminary steps in the determination of the value are three, namely:

1. To determine the dependable net earnings.

2. To determine the proper interest rate for capitalization.

3. To examine the physical property and determine the extent of abnormal de-

cretion, if any, and estimate the sum necessary to make this good.

The first and third steps are somewhat linked together; that is to say, the dependable net earnings are not known until it is known whether proper expenditures for upkeep and the proper reservations for depreciating items have been made.

Earnings. — To find the dependable net earnings the records of earnings and expense must be consulted, the character of the expense items must be examined to determine whether they are all likely to continue or to be lessened or increased in the future or under a proposed new management; and the relations of the property and public must be considered to try to estimate whether or not rates for service are likely to be modified, or expense increased by new requirements of operation. Although opinions may differ on this point, it is thought to be fair to say that expenses to be deducted from earnings do not include fixed charges because these represent a part of the value

of the property. If examination shows that apparent net earnings are too large because the Company has not charged off enough for depreciation, or has not spent enough for proper maintenance of the normal condition of the property, proper adjustments must be made to determine the real from the apparent net earnings. The examination should extend over a number of years in order that the ups and downs of fat and lean years may have their effect and the general tendency of net earnings whether upward, downward, or stationary may be learned.

Capitalizing Rate. — Having found the sum judged to be the normal net earning capacity of the property, a rate of interest for capitalizing is discussed and chosen. The rate is not the allowable rate of return under regulation, but rather a composite rate that represents about what would be necessary to induce careful investors to place their money in the enterprise. If the property is an old substantial property it may be able to

borrow money on mortgage, *i.e.*, sell bonds — at 4½ or 5 per cent or even less, but its stock is not likely to sell in the market below a 5 per cent basis, although this will depend somewhat on the condition of the money market, and it may vary a fraction of a per cent either way. If it happen that the bonds of the company are held on a 4 per cent basis in the market and the stock on a 5 per cent basis, and that there are equal issues of each, the rate to use would be 4½ per cent. If the issues are unlike, as four parts of bonds to five parts of stock, the respective interest rates would be weighted by the numbers expressing the relative amounts of stocks and bonds. Thus in the case mentioned the weighted average interest rate is

$$\frac{4 \times 4 + 5 \times 5}{9} = 4.555.$$

If the property is not so substantial and has a less well-established credit, more risk is involved in investment in it and the rate should be higher. It may

be argued that the rate at which securities are held in the market has nothing to do with value. Certainly the credit of the company depends upon the value of the property and the character of its management, and the rate at which its securities are held is some measure of its credit.

Depreciation. — A railroad property is never in 100 per cent new condition. Even a new road of any magnitude has some few elements, like ties, that begin to deteriorate as soon as placed in the track; rails begin to wear as soon as construction trains begin to run over them. It has not been customary in the past to begin laying aside any moneys to provide an offset to this early wear. Indeed, the United States Supreme Court held for thirty years that a railroad company was not entitled to set aside such moneys in advance of their actual need and by putting the sums in operating expense collect them from the public in rates for service. Only such expenditures as were actually made to renew or

repair defective items could be so charged in operating expense. So the custom of replacing worn-out items as necessary and charging the replacement cost in operating expense which had already grown up was continued, and this custom is known as the replacement method of maintaining a property. Of course it should be the cost of the retired item that is charged in operating expense and collected from the public, rather than the cost of the new item, because in the latter case if the new item costs more than the old, the public is contributing capital to the enterprise in the amount of the excess, and if the new item cost less than the old the owner is losing capital to the extent of the deficiency. The public should not be expected to contribute capital but to pay a return on that contributed by the owner, and to restore to the owner the amount of his capital outlay when that which was purchased with the outlay has been consumed in the service of the public.

Then in 1909 in a Water Works case,

which has since been applied to railroads, the Supreme Court reversed itself and decided that not only has a utility company a right to set aside a proper allowance for growing waste, charge it in operating expense and collect it in the rates for service, but that it is the plain duty of the company so to do, failing which it may find itself at a subsequent date, when a valuation is made in connection with the settlement of some dispute, with a depreciated property and no funds to make good the loss.

And unfortunately some railroad companies have found themselves in exactly this condition. Perhaps this has been the result of a failure of the court to appreciate the real equities in the case because the case was not properly presented. Considering ties, a condition gradually comes about in a normal property such that a fairly regular percentage of ties is renewed each year, and as at any time some would be new, about an equal number ready to be discarded, and equal numbers in various life conditions,

so the average condition of all ties would be about 50 per cent of condition new, or they would have served about half their composite life. Other parts of the property would be found in condition less than new, except that earthwork may be in even better condition at a given date than when it was new. As a general result the property as a whole might inventory from 80 to 85 per cent new, or it would be said that about 15 to 20 per cent of its composite total life has been consumed. Certain courts have accepted this as indicating a loss of value of the physical property of from 15 to 20 per cent of the cost. But this is not correct. The property can never be in better than normal condition for any length of time and so far as depreciation is concerned it is worth just as much as it is practically possible for it to be worth as a going concern of its class if it is in normal condition.

The Interstate Commerce Commission still permits the railroads to maintain their properties, except the single class of

items known as equipment, by the replacement method; but it requires telephone companies to set aside depreciation reserves right from the beginning for all wasting items. This is really the best practice. If the railroad companies had been permitted to do this and had done it, each would have found itself eventually with a fund of from 15 to 20 per cent of the cost of its property which it could use in any one of several ways. It could return it to the stockholders and reduce their stock holdings in an equivalent amount, or it could buy in and retire its bonds, and the invested capital would then agree substantially with an 80 to 85 per cent estimate of value of the property; it could build additions, thus maintaining the invested capital intact in amount; or it could provide betterments, which would bring about the same result. But the railroad companies haven't set aside these reserves; it is doubtful whether or not they knew the necessity or advisability of doing so in the early days; and whether or not they wished

to do so, they were for thirty years prohibited by the United States Supreme Court from doing so. In some cases the earnings may have been sufficient to permit setting aside for depreciation and payment of reasonable return, but the earnings were distributed as dividends or invested in additions or betterments but not to offset depreciation. Whether or not this was good public policy cannot now be questioned; it was authorized or permitted policy. We did not know as much then as we know now. We cannot correct the mistakes of the past by penalizing the business of the present. It can be of no concern whether the property is in 70 per cent condition, 90 per cent condition, or practically 100 per cent condition, provided it is in normal condition and is being kept so by constant adequate expenditures collected from the public and charged in operating expense, so that the cost of maintaining the whole property in as good condition as is practically possible is a deductible quantity when estimating net earnings.

Certain very large and costly items, such as terminals in large cities, cannot be properly maintained by the replacement method except as to current repairs. A terminal costing $25,000,000 or more is not a permanent structure and to replace it, as is usually done with an even larger and more costly structure, will generally require more than a single year, yet charging off such a structure through even a period of a few years during the destruction of the old and the construction of the new is likely to make a too large drain on the surplus generally carried for large emergency expenses. Therefore, if there are such property items belonging to a given property to be valued, some depreciation should be deducted from the base value to cover the lost value due to the estimated loss of life considered as a fraction of the estimated total life. This may be offset by reserves if any have been accumulated. Companies owning such property items should make yearly provision from earnings from the beginning for the re-

tirement of the items. Whether or not they have been permitted to do so would make no difference in the value of the property; but if the public has prohibited the practice, it cannot in justice penalize the company for its failure to do what it was prohibited from doing when the question at issue is a public one involving the "fair value" of the property. The amount of the accrued depreciation of the items should have been collected from the public; if the public has refused to pay it until the whole shall mature, the sum is still owing to the company and should be considered an asset in any public question although it is true that the property has lost value in the amount of the estimated accrued depreciation.

When finding the value of a railroad property by deducting depreciation from capitalized net earnings, that sum should be deducted which it is estimated will be required to restore any abnormally reduced items to normal condition, and such further sum as the estimator may

think necessary to cover accrued loss of value of certain great items, with costs too large to be charged off in operating expense when finally retired from service, but in connection with a public question fair dealing may require the latter loss to be ignored.

Depreciation may be estimated in different ways. For any given item the elapsed service life will be known, and the remaining service life must be estimated, thus the total service life is estimated. Then it will be necessary to determine which of two theories of depreciation shall be used to estimate the loss of value due to the elapsed service life.

1. It may be assumed that loss of value proceeds directly in proportion to age; if half the service life is gone, half the service value is gone. This is known as the straight line theory of depreciation. Service value is cost less salvage value. If an item costing $1000 and having a salvage value of $100 has an estimated service life of twenty years and has been in use ten years, it has lost $\frac{5}{10}$ of $900 or

$450 in service value by the straight line theory and is worth $550 at the date of valuation.

2. It may be assumed that loss of value proceeds exactly in accordance with the growth of a properly computed annuity at compound interest. That is to say if P dollars of value are to be used up in N years, and money is worth r per cent, an annuity is found from the equation

$$A = \frac{Pr}{(1+r)^N - 1},$$

such that being placed at r per cent compound interest it will equal P dollars in N years, and the amount of this annuity and interest accumulations at any time is assumed to be equal to the loss of value of the item up to that time. Applying the theory to the item used in the straight line illustration with respect to which $900 of value is to be consumed in twenty years of which ten have elapsed and if interest be taken at 5 per cent

$$A = \frac{900 \times 0.05}{(1.05)^{20} - 1} = \$27.22,$$

and the amount of this with its interest accumulations is had from the equation

$$S = \frac{P\,(1+r)^n - 1}{(1+r)^N - 1},$$

$$S = \frac{900\,(1.05)^{10} - 1}{(1.05)^{20} - 1} = \$342.35,$$

or considerably less loss of value in ten years than is estimated by the straight line theory. The longer the life of the item, the greater is the discrepancy between the two estimates and it becomes a matter of importance which shall be used. That last described is called the Compound Interest Theory of Depreciation. There is another theory known as the Unit Cost Theory, which, however, is difficult of application particularly to railroad property and which takes into account the lessened service capacity of an old item. If the service capacity is considered to be constant throughout the life of the item, the theory reduces to the compound interest theory, which is, indeed, then a special case of the unit cost theory.

Some engineers prefer the straight line

theory and some the compound interest theory, sometimes, though less advisedly, called the sinking fund theory because the growth of depreciation proceeds just as a sinking fund accumulates. Some courts have adopted the straight line theory. As the value of the use of money should always be considered it would seem that the compound interest theory is the proper theory to adopt. But in any case if it has been customary to set aside a reserve based on any particular theory, it will be fair to adopt that theory for the estimate.

The total cost of an item during its life, if the value of the use of money be taken into account, is exactly the same whether it be maintained under the replacement method or under a reserve method in which the bookkeeping is by either the straight line theory or the compound interest theory, and is the sum to which the cost less salvage of the item will amount if placed at compound interest for the life of the item, or

$$C = P(1 + r)^N$$

but the loss of value proceeds at different rates under the different theories.

Great difficulty will be found in estimating the total lives of many items, such as bridges, buildings, reservoirs, and the like. To get the depreciation each item must be inventoried and judged as to its remaining useful life and its salvage value, after which its total service life is found by adding estimated remaining life and known elapsed life, the proper interest rate and depreciation theory are chosen and the depreciation for the item computed. The total depreciation for the property is then found by summing the several item losses. As has been argued already the whole may be more than should be deducted but this is a matter of equity to be determined by the court or body of final jurisdiction.

Working Capital. — The property valued is assumed to include the necessary free capital in the shape of supplies on hand, quickly convertible securities or cash owned and necessary for current expenses and emergencies. To any extent

that such working capital does not go with the property, and must be supplied by a purchaser, to the same extent is the value of the property reduced below that found by the foregoing method.

PUBLIC REGULATION BASES

Return Base. — The courts have said that a public utility corporation is entitled to earn in addition to operating expense and depreciation allowances a "fair return" on the "fair value" of its property used in the public service. Confusion as to the meaning of "fair value" and disagreement as to what constitutes "fair return" have caused much difficulty in the application of the law thus laid down. Witnesses have differed widely in their testimony, commissions have not judged alike, nor have the courts agreed in their interpretations. "Fair value" does not always mean the same thing as the value of the preceding paragraphs. The courts have said that the "fair value" for estimating fair return, and hence the reasonableness of

rates producing the return, cannot be capitalized net earnings less abnormal depreciation and sometimes working capital, because net earnings depend on the very rates that may be in question.

Therefore the courts have required some other quantity to be found which could be called the "fair value" of a property in question. This quantity would better be called by another name as, for instance, *return base*, to save the confusion arising from the use of the word value in several senses. One quantity that has been much in favor as a basis for the estimation of the return base is "cost of reproduction less depreciation" estimated as of the day of valuation. Another basis that has not been used much owing to an alleged difficulty of determination is "original cost to date less depreciation" — the actual sacrifice of the owner in producing the property used in the public service. It is true that owing to the scarcity, insufficiency, and inaccuracy of early records, it is practically impossible to find the actual cost

to date of a very old property with many old items still in use. But many, perhaps most, of the items actually in use at a given date will be relatively new and as it is the cost of these items — not those long ago used up — that is to be found, it is perhaps fair to say that *estimated* original cost to date may be not farther from the truth than *estimated* cost of reproduction, which is a term subject to more than one interpretation.

Engineers know how to estimate in advance the cost of producing a new railroad, and the principles involved in estimating the cost of reproduction are not different. Certain quantities may be more exactly known than for an advance estimate, but when certain hypotheses have been agreed upon the procedure is not different from that of an advance estimate for a new property. But these hypotheses are what make trouble. The courts have said that the "value" to be determined is that of the time of valuation. This gives color to the claim of some that the surrounding physical con-

ditions to be assumed for the estimate must be those existing at the date of valuation rather than those existing when the property was created, and that prices of labor and materials, and methods of doing work should be those prevailing at the date of valuation. Others recognizing certain difficulties say that present prices and methods are to be used but with surrounding physical conditions as they were when the property was created. Others take a middle ground and say that certain historic conditions must be assumed and certain present day conditions, using one or the other in accordance with their ideas of what is fair, or would tend to produce a fair result. A few suggestions will illustrate the difficulty of a fixed rule for all cases.

[1] For the construction of a railroad across a deep valley having a relatively insignificant stream in its bottom, a high trestle or bridge was necessary and was

[1] Taken from the Report of the American Society of Civil Engineer's Special Committee. Proceedings for December, 1916.

built wholly "in the dry." Later the valley was converted into a reservoir. In an estimate of the cost of reproduction of the railroad as of a given date subsequent to the building of the reservoir, shall the cost of producing the bridge be estimated on the supposition that the valley is dry as it was originally or flooded with water as it is at the date of valuation? The latter supposition would result in a greater estimate than the former, while it should be plain that the creation of the reservoir has added nothing to the value of the bridge or railroad; indeed it may be said, perhaps, to have lessened its value owing to greater cost of maintenance or future replacement.

Again, certain commissions in estimating cost of reproduction have considered necessary clearing and grubbing of the right of way to be indicated by present surrounding conditions; if at the time of valuation the road is lined on either side by forest or orchard, clearing and grubbing will be assumed to be necessary; if the land is clear on either side

no clearing or grubbing will be estimated. This is a relatively small matter in the country, but let the same reasoning be applied to a line built into a great city. When the line was built there were no houses of any kind along its route which lay through open vacant fields. Now after years of city growth the right of way is lined on both sides with costly buildings. Shall it be assumed in the reproduction estimate that such buildings cover the right of way and must be purchased and wrecked? None were ever there.

The question of land holdings has been troublesome. The Supreme Court of the United States has said quite positively in the "Minnesota Rate Case" that the "value" of the right of way — it is not quite clear whether the court means the estimated cost of reproduction, but apparently not — must be the same, unit area for unit area, as the fair value of similar adjacent land without addition for cost of acquisition or overhead expense, or damages. And yet the court

seems to indicate in its decision that in a valuation it would accept cost as determined by the well-known methods of condemnation under the right of eminent domain as reasonable measure of "fair value." Now it is a well-settled principle of law that the price to be paid for a piece of land when taken by condemnation, and when less than the whole of a given parcel is taken, is the fair value of the portion taken plus the damage caused by the taking to the part not taken — known as severance damage — and such takings always involve certain costs of acquisition.

At present the whole matter of estimating land values for railroad right of way is in an unsettled condition, there being those — though not the higher courts — who hold that donated lands should not be included in the company's property estimates, even though it may be argued that it is highly probable that the company has fully paid for those lands in early losses, and that whether or not it has, a gift is as much the prop-

erty of the person receiving it as the same article would be if purchased for money. Only under the conception that the company is the agent of the public and holds its property much as if it were property of the public held in trust by the company, can donated property be held out of a valuation. This relationship of agency is not endorsed by the courts.

The right to much right of way is but an easement permitting the use of the property for railroad purposes only — the company does not own the fee. Under a variety of assumptions and with much uncertainty, one can estimate what it would cost now to get these right-of-way easements, but would this seem to be a fair estimate of the sacrifice of the owners for this particular item, is it a fair or proper measure of "fair value" — return base?

[1] A railroad was built through a heavily

[1] Taken from the Report of the American Society of Civil Engineer's Special Committee. Proceedings of December, 1916.

timbered territory and paid, say, $40 an acre for its right of way, and $40 to $50 more for clearing and grubbing. Its principal business for many years was hauling lumber. Eventually the surrounding territory was cleared. Settlement by farmers did not develop. No prosperous towns grew up, but by establishing a through connection, the road managed to keep its earnings up and hence its value. The surrounding land is now worth perhaps $5 an acre and there would be no cost for clearing were a new road to be built along side the present road. Should the cost of reproduction estimate for the right of way be based on the original or the present conditions? And, if on the present conditions, is the cost of reproduction a fair measure of the value of the property on which to base a fair return rate?

A large item of expense in creating a great property is the item of interest during construction and early development. A new company promoting a new property will have to pay a high

rate for money. Including discounts and bonuses, it is often more than 10 per cent. A well-established company earning a good return can borrow money for 5 per cent or less. Shall the interest rate to be used in estimating the cost of reproduction be that of a new company promoting a new property or that obtainable by the present prosperous owners of the property to be valued?

One engineer desires to make his estimate of cost of reproduction in such a way that the court will accept it as a basis of value; another wishes to make an estimate of reproduction as of a given date in accordance with his notion of the logic of the requirement and without regard to whether all of the several items included in the estimate are properly items to be included in the return base or "fair value." Some engineers, some courts, and some commissions seem to think that the logic of the requirement means an estimate based on presently existing physical conditions at and around the property, present prices for materials

and labor and present methods of doing work. Those who would make the estimate conform as nearly as possible to what the court will finally call "fair value," that present prices and methods must be used with historic conditions.

There are others, who feel that an estimate of cost of reproduction as of a given day should be based on present prices of land, labor, and materials, and present conditions, except that the history of the property should be consulted to determine those elements of cost, the evidence of which was destroyed by the creation of the property, and which it would be reasonable to suppose would still be necessary elements of cost of a new property like that in question constructed on the site of the existing property, if that property had not been created; and that all such elements of cost should be included. This theory seems to be the most logical theory on which to base an estimate of the cost of reproduction as of a given date, but it is recognized that the result less proper depreciation is not

always the proper measure of the return base or "fair value" of an old property.

There are so many differences with respect to the several questions that have been raised in the preceding paragraphs that the propriety of using cost of reproduction new less depreciation as a base for "fair value" or proper return base for an old property seems questionable. What should be determined upon finally should be that which is fair, and the following suggestions are offered with respect to new properties assumed to be successful, old successful properties, and old unsuccessful properties.

New Property. — The fair reasonable cost including a proper working capital is the best base on which to estimate and fix the fair rate of return. The service rate allowed should be such, if possible, that it will not be necessary to raise the rate after a little to cover fair return on the early deficiencies that may, and probably will, occur and should be added to the return base as they accrue. This is not the place to argue as to the proper

rate of return; that argument has been made already. Let it be repeated, however, that the rate must be large enough to attract private capital or the public will have to serve itself or go without service. And with respect to railroad property it should be noted that particular rates must always be made for particular services largely if not entirely without consideration of rate of return on capital. Some service must be rendered at a loss, and to offset this, other service must be at a rate that by itself is exhorbitantly profitable, though well within what the traffic will bear. This is necessary in order that the greatest benefit may be rendered to the greatest number and general progress encouraged. The net result to the company for its whole service should be a fair rate of return on the fair cost of its property and a fair profit or wage for the service rendered.

Old Successful Property. — Again it is what is fair between the people served and the serving company that should

govern in the determination of fair return base. Here the courts have said more than once that it is *not cost but present value* that must be used. There is no real measure of value of an old going business but accumulated reasonably certain earning capacity. But shall the corporation have all the earning capacity that it has acquired under past regulation or no regulation? Is this fair? And if it is, could rates ever be reduced by law? Could the "fair value" of a successful old property ever be more than capitalized net earnings less deferred maintenance and properly deductible depreciation? The courts have held that the company is entitled in a return base to every element of value that it has acquired that represents usefulness in its service, but not to the earning capacity element, which would seem to be the only thing of great value that has been acquired. The physical properties are of value above salvage, no matter what they cost, only as they enable the owner to earn something for himself, and the earn-

ing — usually called interest or return — capitalized is the measure of that value. The earnings of a single month must not be used, nor yet those of a single year, but rather must the earnings of several years be examined, and a prophecy for a reasonably short future — say five years — should be made, that the effect of brief extraordinary conditions may be eliminated or averaged into the whole.

It would certainly seem to be fair to allow the company whatever it has accumulated lawfully under such regulation as may have been exercised. If there has been no regulation or defective regulation, this is the fault of the public for which the company with its possible many investors should not be made to suffer. If the company has also been at fault the matter is to be adjudicated. And in spite of the assertions of courts to the contrary, the adoption of fair present earning capacity as the basis for value or return base will not always result in reasoning in a circumference, because almost all successful properties are growing

and in almost all cases where unwise regulation has not made earnings too low, earnings are normally increasing under present rates for service. Rates then may be reduced to keep the future rate of return on the presently determined value stationary and to provide a specified rate of return on all new capital that may be invested in the property. This would not be a simple matter — no legislature could off-hand enact a two cent or a one cent law. Action should be had only after the most careful examination, analysis, and recommendation by a competent commission.

Mistakes would be made in any event and prescribed rates might prove too low or too high. But regulations could be made to cover such discrepancies as they might occur. In some cases cost of reproduction less depreciation figured on any reasonable set of hypotheses would be larger than value based on earnings; in other cases it would be less.

While these ideas are here set forth as sound, it is realized that many wise men

have held to cost of reproduction, or original cost to date, as better return bases than value as here defined, and that, indeed, as has been said already, value measured by earning power is not allowed by the courts in rate cases. Thus the interested engineer, owner, or commissioner should study this matter with great care getting such arguments as he can from published books, papers, and court decisions, but finally making up his own mind as to what is fair. The final decision will always be with a court. This one additional statement may be made:

No corporation serving the public should be made to feel that its property is of uncertain value due to intermittent regulation of rates according to no fixed rule.

If the return is to be limited in any way by public regulation, then when this is first undertaken for an old property, the value acquired to the date of action should be allowed, and a method of regulation, automatic so far as possible in its action, should be adopted for the

future. For a new company the same procedure should be had, but here the return base is the fair and reasonable sacrifice of the owner in creating the property.

Old Unsuccessful Property. — An unsuccessful property will be defined to be one which with such management as it has had, under such regulation or lack of regulation as has prevailed, has been unable to earn a fair rate of return on the sacrifice of its owners in creating the property. This does not mean reproduction cost but original cost to date. The property need not be failing to be unsuccessful, it has only to be earning less than a fair rate of return. It ought to be clear that if the deficiency is due to the public regulation, rates should be established at once, if possible, such as to yield a fair return on the sacrifice of the owners including the past deficiencies of earnings below an agreed fair rate on the original and growing sacrifice. It might be fair to base the return on cost of reproduction but certainly not on value.

If the regulation has not affected the return but the property has been either mismanaged or wisely or unwisely built ahead of the growth of an adequate traffic, the property cannot be valued for a return base at its present value. The only fair return base would seem to be the sacrifice of the owners, and it may easily happen that no rate under which traffic will move, will yield a fair return on this investment. For the time being, then, the value of the property as a going concern is small, nothing, or less than nothing if the service must be continued, but the proper return base is at least the sacrifice of the owners.

If the property cannot be made under freedom of charges to earn at least some return on the sacrifice, it will be a failing venture, though if it can earn operating expenses including depreciation, it may be said to have some value in possible future growth of business. If under freedom of charge it cannot earn operating expense, and there is no prospect that it will be able to do this in the

reasonably near future, it is practically worthless and should be sold for such salvage as may be had. There is but a small mileage of this class of railroad property in America.

Public Purchase Base. — If the public proposes to take over a public utility property, it should pay the owner the value of the property, and possibly more. If the property is a normal successful property, the purchase price should be the value at the time of purchase. If the property cannot earn a fair return on the sacrifice of its owners and this is not the result of unwise regulation, and the property is, therefore, either less than successful or wholly a failing venture, it should be noted that the public has not underwritten the enterprise and hence is under no obligation to pay more than the value, which may be negative, unless it desires the service maintained, in which case the purchase price should be the proper and reasonable sacrifice of the owners to create the property less accrued depreciation resulting from an abnormal condi-

tion, but whether more than this to compensate them for their operation losses or to give a contractor's profit may be a question of business ethics to be settled in each particular case. It would seem to be clear that if the corporation has undertaken the project of its own free will and without inducement on the part of the public, then the public has neither a legal or moral obligation to make good the losses, it will do its part if it relieves the corporation from the burden of further losses. Of course, if the early charter or franchise has provided a means or method for finding the purchase price, that means or method will be followed. If the property is a new property not yet earning at its normally expected rate, the proper purchase price should be the proper and reasonable sacrifice of the owners to the date of purchase, plus a contractor's profit.

Capitalization Base. — The "fair value" or base for allowed capitalization of a new property should be the same as the return base of such a prop-

erty, *i.e.*, the total actual and estimated sacrifice of the owners up to the estimated time when the property will be a normal going concern earning a fair return.

If the property is an old one and successful, the capital base is less important unless the public proposes to limit sharply the rate of return. In this case the capital base should be found in the same way as the exchange value, but the capitalizing rate should be the average fair return rate, for it must be assumed that no reasonable regulating body will ever limit fair rate of return to a single rate. There must be a minimum rate for lean years and a maximum rate for fat years, any return between the two being considered fair; any return below the minimum being too low and calling for a larger return later or an addition to capital, and any return above the maximum being unreasonably large and one that calls for some adjustment or crediting of the surplus to the public.

Taxing Base. — The base for taxation cannot be defined because it must conform to the laws of the various states. A suggestion may be made, however, that in so far as a railroad is considered to be a private property, it is at present subject to taxation and should be taxed exactly as other manufacturing property is taxed. It may be further suggested that if taxed, much simplicity would result if only its income were taxed as a whole and the tax distributed according to some properly worked out plan to the several states and subordinate political divisions through which the road passes. This would mean federal control of all interstate roads with respect to taxes, and this would conform to the growing idea that complete control of interstate roads should be with the federal government. It is suggested elsewhere that utility corporations should not be taxed, but that their distributed net earnings should be taxed.

Conclusion. — No attempt has been made to set forth details of valuation

work. The attempt has been rather to present what seem to be just and proper general principles that should be in the minds of the engineer, the jurist, and the business man, when considering the valuation of a public utility, to be made in connection with some question of public regulation.

It seems to be necessary and proper that there shall be wise and intelligent public control of public utilities, but it may be doubted whether it is wise to try to regulate rates for service so as to provide just a fair return on the fair value of railroad properties. Whether or not a particular rate is such as to yield a fair return on the fair value of the property used in the particular service is in general impossible of ascertainment. It may be possible to determine whether passenger earnings as a whole are sufficient to pay a fair return on the portion of the property used in the passenger service but even this is quite difficult. Similarly it may be possible but difficult to do the same thing for freight

earnings as a whole. The idea sometimes advanced that every service should pay for itself is thought to be unsound. It may be entirely proper to handle some business, that could not afford to pay more, even at a loss if thereby some greater business that can and will afford a good return is encouraged and developed. It has certainly been good policy for pioneer roads to favor passenger traffic, particularly of immigrants, to build up the territory adjacent to their lines, and there are very many other justifiable practices that can be cited. Moreover, as has been pointed out in a previous chapter, parallel lines with varying characteristics and earning capacities and the close interrelation of many roads introduce many complications. If the regulation shall see that there is no unjust discrimination in rates or service as between individuals or territories served, the rates quite generally may be left to take care of themselves otherwise.

But if the earnings as distinguished from rates are to be regulated and kept

within certain supposedly fair limits, then it is submitted that the practice here advocated with respect to return base is fair as between the public and the corporation.

AFTERWORD

Whatever may be the opinion of the reader who has reached this point as to the correctness of the positions taken in what precedes, the Author hopes that it has been his privilege to say something that will arouse thought, opposition, if necessary, to the end that more men whether utility owners, utility agents, or citizens served, when discussing public utility questions will quietly ask "What is fair in this matter?" and will proceed to think.

It makes no difference whether the question at issue seems to be between a greedy corporation and a greedy public, a greedy corporation and a fair public, a fair corporation and a greedy public, or a fair corporation and a fair public, and we have known of all these combinations, the final decisions of all questions not determined by law should conform to correct answers to the one question, "What is Fair?"

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